

Vague D Campagne d'évaluation 2017 – 2018

Unité de recherche

Sélection des produits et des activités de recherche

Annexe 4

Nom de l'unité / de l'équipe : **Laboratoire d'Études du Rayonnement et de la Matière en Astrophysique et Atmosphères**

Acronyme : **LERMA**

Nom du directeur pour le contrat en cours : **Dariusz C. Lis**

Nom du directeur pour le contrat à venir : **To be selected in 2018**

On dressera la liste des produits de la recherche et des activités de recherche en respectant les indications de nombre et de présentation données dans le dossier d'autoévaluation.

Lorsqu'une unité n'est pas concernée par un type de produit de la recherche, parce qu'elle n'en compte aucun dans ses réalisations ou qu'ils ne relèvent pas de son domaine de compétences, elle précise que cette rubrique est « sans objet » pour elle.

Dans le cas des unités pluri-équipes, lorsque des produits sont communs à plusieurs équipes de l'unité, ils sont regroupés à part dans la rubrique concernée.

Dans le cas de publications cosignées par plusieurs personnes, la liste de tous les auteurs sera établie, excepté lorsque le nombre de co-auteurs sera supérieur à la quinzaine. Les noms des membres de l'unité de recherche, de l'équipe interne ou du thème seront soulignés dans la liste des co-auteurs.

Pour les personnels recrutés au cours des cinq dernières années, les produits et les activités réalisés dans leur unité de recherche d'origine seront mentionnés dans une liste séparée.

I. PRODUITS DE LA RECHERCHE

1. Journaux / revues

Articles scientifiques

Pôle “Galaxies and cosmology”

20% of the publications - (see all publications at aramis.obspm.fr/~combes/pole1/pub.html)

2016

1. **Semelin B.**, Detailed modelling of the 21-cm Forest, 2016, MNRAS, 455, 962
2. Garcia-Burillo, S., **Combes, F.**, Ramos Almeida, C. et al.: 2016, ALMA resolves the torus of NGC 1068: continuum and molecular line emission, ApJ 823, L12
3. **Hamer, S. L.**, Edge, A. C., Swinbank, A. M., Wilman, R. J., **Combes, F.**, **Salome, P.**, Fabian, A. C., Crawford, C. S., Russell, H. R., Hlavacek-Larrondo, J., McNamara, B., Bremer, M. N., 2016, Optical Emission Line Nebulae in Galaxy Cluster Cores 1: The Morphological, Kinematic and Spectral Properties of the Sample, MNRAS 460, 1758
4. **Salome Q.**, **Salome P.**, **Combes F.**, **Hamer S.**: 2016, Atomic-to-molecular gas phase transition triggered by the radio jet in Centaurus A, A and A 595, A65
5. El-Zant, A., **Freundlich, J.**, **Combes, F.**: 2016, From cusps to cores: a stochastic model, MNRAS 461, 1745
6. **Scharwaechter, J.**, **Combes, F.**, **Salome, P.**, Sun, M., Krips, M.: 2016, The over-massive black hole in NGC 1277: New constraints from molecular gas kinematics, MNRAS, 457, 4272
7. **Melchior, A.-L.**, **Combes, F.**, 2016, Dense gas tracing the collisional past of Andromeda. An atypical inner region?, A and A, 585, A44
8. McElroy, R. E., Husemann, B., Croom, S. M., Davis, T. A., Bennert, V. N., Busch, G., **Combes, F.**, Eckart, A., Perez-Torres, M., Powell, M., **Scharwaechter, J.**, Tremblay, G. R., Urrutia, T., 2016, The Close AGN Reference Survey (CARS) - Mrk 1018 returns to the shadows after 30 years as a Seyfert 1, A and A 593, L8
9. **Dasyra, K. M.**, **Combes, F.**, Oosterloo, T., Oonk, J. B. R., Morganti, R., **Salome, P.**, Vlahakis, N., 2016, ALMA reveals optically thin, highly excited CO gas in the jet-driven winds of the galaxy IC5063, A and A, 595, L7
10. Martinez-Delgado, D., Lasker, R., Sharina, M. et al. **Valls-Gabaud, D.**: 2016, Discovery of an Ultra-diffuse Galaxy in the Pisces--Perseus Supercluster, AJ 151, 96
11. Planck Coll including **Lamarre J-M**, **Coulais A.** 2016: Planck 2015 results. XIII. Cosmological parameters
12. **de Vega, H.J.**, **Sanchez, N.G.**: 2016, The Dark Matter distribution function and Halo Thermalization from the Eddington equation in Galaxies, Int. J. Mod. Phys. A31, 1650073

2015

1. Reshetnikov, V., **Combes, F.**, 2015, Polar-ring galaxies: the SDSS view on the symbiotic galaxies, MNRAS, 447, 2287
2. Renaud F., Bournaud F., Emsellem E., Agertz O., Athanassoula E., **Combes F.**, Elmegreen B., Kraljic K., Motte F., Teyssier R.: 2015, Environmental regulation of cloud and star formation in galactic bars, MNRAS, 454, 3299
3. Randriamampandry T., **Combes F.**, Carignan C., Deg N.: 2015, Estimating non-circular motions in barred galaxies using numerical N-body simulations, MNRAS, 454, 3743
4. Hunt, L. K., Garcia-Burillo, S., Casasola, V., Caselli, P., **Combes, F.**, Henkel, C., Lundgren, A., Maiolino, R., Menten, K. M., Testi, L., Weiss, A., 2015, Molecular depletion times and the CO-to-H₂ conversion factor in metal-poor galaxies, A and A, 583, A114
5. Iodice, E., Coccato, L., **Combes, F.**, de Zeeuw, T., Arnaboldi, M., Weilbacher, P. M., Bacon, R., Kuntschner, H., Spavone, M., 2015, Mapping the inner regions of the polar disk galaxy

- NGC4650A with MUSE, A and A, 583, A48
- 6. **Verdugo C., Combes F., Dasyra K., Salome P.**, Braine J.: 2015, Ram Pressure Stripping in the Virgo Cluster, A and A, 582, A6
- 7. **Scharwaechter, J., Combes, F., Salome, P.**, Sun, M., Krips, M.: 2015, The over-massive black hole in NGC 1277: New constraints from molecular gas kinematics, MNRAS, 457, 4272
- 8. Garcia-Burillo, S., **Combes, F.**, Usero, A., Aalto, S., Colina, L., Alonso-Herrero, A., Hunt, L.K., Arribas, S., Costagliola, F., Labiano, A., Neri, R., Pereira-Santaella, M., Tacconi, L.J., van der Werf, P.P.: 2015, High-resolution imaging of the molecular outflows in two mergers: IRAS17208-0014 and NGC1614, A and A, 580, A35
- 9. **Dasyra, K.M.**, Bostrom, A.C., **Combes, F.**, Vlahakis, N.: 2015, A radio jet drives a molecular and atomic gas outflow in multiple regions within one square kiloparsec of the nucleus of the nearby galaxy IC5063, ApJ, 815, 34
- 10. **Halle, A.**, Di Matteo, P., Haywood, M., **Combes, F.**: 2015, Quantifying stellar radial migration in a N-body simulation: blurring, churning, and the outer regions of galaxy discs, A and A, 578, A58
- 11. **Hamer S., Salome P., Combes F., Salome Q.**: 2015, MUSE discovers perpendicular arcs in Cen A inner filament, A and A, 575, L3
- 12. O'Sullivan, E., **Combes, F.**, **Hamer, S.**, **Salome, P.**, Babul, A., Raychaudhury, S.: 2015, Cold gas in group-dominant elliptical galaxies, A and A, 573, A111

2014

- 1. Zawada, K., **Semelin B., Vonlanthen P.**, S. Baek, Y. Revaz, Light cone anisotropy in the 21 cm signal from the epoch of reionization, 2014, MNRAS, 439, 1615
- 2. Dessauges-Zavadsky M., **Verdugo C., Combes F.**, Pfenniger D.: 2014, CO map and steep Kennicutt-Schmidt relation in the extended UV disk of M63, A and A, 566, A147
- 3. Garcia-Burillo, S., **Combes, F.**, Usero, A., et al., 2014, Molecular line emission in NGC1068 imaged with ALMA. I An AGN-driven outflow in the dense molecular gas, A and A, 567, A125
- 4. **de Vega, H. J.**, Salucci, P., **Sanchez, N. G.**: 2014, Observational rotation curves and density profiles versus the Thomas-Fermi galaxy structure theory, MNRAS 442, 2717
- 5. **Combes, F.**, 2014, Bulge formation in disk galaxies with MOND, A and A, 571, A82
- 6. Muller, S., **Combes, F.**, Guelin, M., **Gerin, M.**, Aalto, S., Beelen, A., Black, J. H., Curran, S. J., Darling, J., Dinh-V-Trung, Garcia-Burillo, S., Henkel, C., Horellou, C., Martin, S., Marti-Vidal, I., Menten, K. M., Murphy, M. T., Ott, J., Wiklind, T., Zwaan, M. A.: 2014, An ALMA Early Science survey of molecular absorption lines toward PKS1830-211 -- Analysis of the absorption profiles, A and A, 566, A112
- 7. Di Matteo, P., Haywood, M., Gomez, A., van Damme, L., **Combes, F., Halle, A., Semelin, B.**, Lehnert, M. D., Katz, D.: 2014, Mapping a stellar disk into a boxy bulge: The outside-in part of the Milky Way bulge formation, A and A, 567, A122
- 8. Sakamoto, K., Aalto, S., **Combes, F.**, Evans, A., Peck, A.: 2014, A Luminous Infrared Merger with Two Bipolar Molecular Outflows: ALMA and SMA Observations of NGC 3256, ApJ 797,90
- 9. Jachym, P., **Combes, F.**, Cortese, L., Sun, M., Kenney J.D.P., 2014, Abundant molecular gas and inefficient star formation in intracluster regions: Ram pressure stripped tail of the Norma galaxy ESO137-001, ApJ 792, 11
- 10. **Dasyra, K.M., Combes, F.**, Novak, G.S., Bremer, M., Spinoglio, L., Pereira Santaella, M., Salome, P., **Falgarone, E.**, 2014, Heating of the molecular gas in the massive outflow of the local ultraluminous-infrared and radio-loud galaxy 4C12.50, A and A, 565, A46
- 11. **Freundlich, J.**, Jog, C.J., **Combes, F.**, 2014, Local stability of a gravitating filament: a dispersion relation, A and A, 564, A7
- 12. **Combes F.**, Garcia-Burillo S., Casasola V., Hunt L., Krips M., Baker A.J., Boone F., Eckart A., Marquez I., Neri R., Schinnerer E., Tacconi L.J., 2014, ALMA reveals the feeding of the Seyfert 1 nucleus in NGC 1566, A and A, 565, A97
- 13. David, L.P., Lim, J., Forman, W., Vrtilek, J., **Combes, F., Salome, P.**, et al. 2014, Molecular Gas in the X-ray Bright Group NGC 5044 as Revealed by ALMA, ApJ, 792, 94

2013

- 1. Hasegawa K., **Semelin B.**, The impacts of ultraviolet radiation feedback on galaxies during the epoch of reionization, 2013, MNRAS, 428, 154

2. **Combes F.**, Garcia-Burillo S., Casasola V., Hunt L., Krips M., Baker A.J., Boone F., Eckart A., Marquez I., Neri R., Schinnerer E., Tacconi L.J., 2013, ALMA observations of feeding and feedback in nearby Seyfert galaxies: an AGN-driven outflow in NGC 1433, *A and A*, 558, A124
3. Marti-Vidal I, S. Muller, **F. Combes**, S. Aalto, A. Beelen, J. Darling, M. Guelin, C. Henkel, C. Horellou, J.M. Marcaide, S. Martin, K.M. Menten, Dinh-V-Trung, M. Zwaan, 2013, Probing the jet base of the blazar PKS1830-211 from the chromatic variability of its lensed images. Serendipitous ALMA observations of a strong gamma-ray flare, *A and A*, 558, A123
4. Renaud, F., Bournaud, F., Emsellem, E., Elmegreen, B., Teyssier, R., Alves, J., Chapon, D., **Combes, F.**, Dekel, A., Gabor, J., Hennebelle, P., Kraljic, K.: 2013, A sub-parsec resolution simulation of the Milky Way: Global structure of the ISM and properties of molecular clouds, *MNRAS*, 436, 1836
5. Casasola V., Magrini L., **Combes F.**, Mignano A., Sani E., Paladino R., Fontani F.: 2013, A gas-rich AGN near the centre of a galaxy cluster at $z=1.4$, *A and A* 558, A60
6. R. Genzel, L. J. Tacconi, J. Kurk, S. Wuyts, F. **Combes, J. Freundlich**, et al 2013, PHIBSS: molecular gas, extinction, star formation and kinematics in the $z=1.5$ star forming galaxy EGS13011166, *ApJ* 773, 68
7. Jablonka P., **Combes F.**, Rines K., Finn R., Welch T.: 2013, Cold gas in the inner regions of intermediate redshift clusters, *A and A* 557, A103
8. **Combes F.**, Moiseev A., Reshetnikov V., 2013, Molecular content of polar ring galaxies, *A and A* 554, A11
9. Di Matteo, P., Haywood, M., **Combes, F.**, **Semelin, B.**, Snaith O.N., 2013, Signatures of radial migration in barred galaxies: Azimuthal variations in the metallicity distribution of old stars, *A and A* 553, A102
10. **J. Freundlich, F. Combes**, L. J. Tacconi, M. C. Cooper, R. Genzel, R. Neri, A. Bolatto, F. Bournaud, A. Burkert, P. Cox, M. Davis, N. M. Forster Schreiber, S. Garcia-Burillo, J. Gracia-Carpio, D. Lutz, T. Naab, S. Newman, A. Sternberg, B. Weiner, 2013, Towards a resolved Kennicutt-Schmidt law at high redshift, *A and A* 553, A130
11. **Halle, A., Combes, F.**, : 2013, Influence of baryonic physics in galaxy simulations: a semi-analytic treatment of the molecular component , *A and A* 559, A55
12. Destri, C., **de Vega, H. J., Sanchez, N. G.**: 2013, Warm dark matter primordial spectra and the onset of structure formation at redshift z , *PhRvD* 88h3512
13. **Melchior A-L., Combes F.**, 2013, A cold gas reservoir to fuel M31 nuclear black hole and stellar cluster , *A and A*, 549, A27
14. **Combes F.**, Garcia-Burillo S., Braine J., Schinnerer E., Walter F., Colina L., 2013, Gas Fraction and Star Formation Efficiency at $z < 1.0$, *A and A*, 550, A41
15. Wang, J.-M., Du, P., **Valls-Gabaud, D.**, Hu, C., Netzer, H.: 2013, Super-Eddington Accreting Massive Black Holes as Long-Lived Cosmological Standards, *Physical Review Letters*, 110, 081301

2012

1. Baek S., Ferrara A., **Semelin B.**, Joint Ly-alpha emitters-quasars reionization constraints, 2012, *MNRAS*, 423, 774
2. **Salome, P.**, Guelin, M., Downes, D. et al.: 2012, BR1202-0725: an extreme multiple merger at $z = 4.7$ *A and A* 545, A57
3. Levshakov S.A., **Combes F.** Boone F., Agafonova I.I., Reimers D., Kozlov M.G., 2012, An upper limit to the variation in the fundamental constants at redshift $z = 5.2$, *A and A Letters*, 540, L9
4. **Dasyra K.M., Combes F.**, 2012, Cold and warm molecular gas in the outflow of 4C12.50, *A and A*, 541, L7
5. Minchev I., Famaey B., Quillen A.C., **Di Matteo P., Combes F.**, Vlajic M., Erwin P., Bland-Hawthorn J., 2012, Evolution of Galactic Disks: Multiple Patterns, Radial Migration and Disk Outskirts, *A and A* 548, A126
6. **Dasyra, K.M., Combes, F., Salome, P.**, Braine J.: 2012, Survival of molecular gas in Virgo's hot intracluster medium: CO near M86, *A and A* 540, A112
7. **Combes F.**, Rex M., Rawle T.D., et al, 2012, A bright $z=5.2$ lensed submillimeter galaxy in the field of Abell 773: HLSJ091828.6+514223, *A and A*, 538, L4
8. **Combes F.**, Boquien M., Kramer C., et al. 2012, Dust and gas power-spectrum in M33

HCERES

Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

Évaluation des unités de recherche
Novembre 2016

- (HERM33ES), A and A, 539, A67
- 9. L'Huillier B., Combes, F., Semelin B.: 2012, Mass assembly of galaxies: smooth accretion versus mergers, A and A, 544, A68
 - 10. R. Genzel, L. J. Tacconi, F. Combes, et al 2012, The metallicity dependence of the CO- H₂ conversion factor in $z > 1$ star forming galaxies, ApJ, 746, 69
 - 11. Planck Collaboration, with Lamarre J-M, Coulais A. 2012, Planck intermediate results. I. Further validation of new Planck clusters with XMM-Newton, A and A 543, A102
 - 12. de Vega, H. J., Sanchez, N. G.: 2012, Cosmological evolution of warm dark matter fluctuations. I. Efficient computational framework with Volterra integral equations, PhRvD 85d3516
 - 13. Riess, A. G., Fliri, J., Valls-Gabaud, D.: 2012, Cepheid Period-Luminosity Relations in the Near-infrared and the Distance to M31 from the Hubble Space Telescope Wide Field Camera 3, ApJ, 745, 156

Group GRACE, previously at GEPI, with publications signed under GEPI until 2017.

2016

- 1. Huertas-Company, M., Bernardi, M., Pérez-González, P. G., Ashby, M. L. N., Barro, G., Conselice, C., Daddi, E., Dekel, A., Dimauro, P., Faber, S. M., Grogin, N. A., Kartaltepe, J. S., Kocevski, D. D., Koekemoer, A. M., Koo, D. C., Mei, S., Shankar, F., Mass assembly and morphological transformations since $z \sim 3$ from CANDELS, 2016, MNRAS, 462, 4495
- 2. Ascaso, B., Benítez, N., Dupke, R., Cypriano, E., Lima-Neto, G., López-Sanjuan, C., Varela, J., Alcaniz, J. S., Broadhurst, T., Cenarro, J., Chandrachani D.N., Díaz-García, L.A., Fernandes, C.A. C., Hernández-Monteagudo, C., Mei, S., Mendes de Oliveira, C., Molino, A., Oteo, I., Schoenell, W., Sodré, L., Viironen, K., Marín-Franch, A., An Accurate Cluster Selection Function for the J-PAS Narrow-Band wide-field survey, 2016, MNRAS, 456, 429
- 3. Licitra, R., Mei, S., Raichoor, A., Erben, T., Hildebrandt, H., The RedGOLD Cluster Detection Algorithm and its Cluster Candidate Catalogue for the CFHT-LS W1, 2016, MNRAS, 455, 3020

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- 1. Huertas-Company, M., Gravet, R., Cabrera-Vives, G., Pérez-González, P. G., Kartaltepe, J. S., Barro, G., Bernardi, M., Mei, S., Shankar, F., Dimauro, P., Bell, E. F., Kocevski, D., Koo, D. C., Faber, S. M., A Catalog of Visual-like Morphologies in the 5 CANDELS Fields Using Deep Learning, 2015, ApJS, 221, 8
- 2. Ascaso, B., Mei, S., Benítez, N., I. Apples to apples A2: photometric redshift predictions for next-generation surveys, 2015, MNRAS, 453, 2515
- 3. Huertas-Company, M., Pérez-González, P. G., Mei, S., Shankar, F., Daddi, E., Barro, G., Cabrera-Vives, G., Cattaneo, A., Dimauro, P., Gravet, R., The morphologies of massive galaxies from $z \sim 3$ - Witnessing the 2 channels of bulge growth, 2015, ApJ, 809, 95

2014

- 1. Kaviraj, S., Huertas-Company, M., Cohen, S., Peirani, S., Windhorst, R. A., O'Connell, R. W., Silk, J., Dopita, M. A., Hathi, N. P., Koekemoer, A. M., Mei, S., Rutkowski, M., Ryan, R. E., Shankar, F., The role of major mergers in the size growth of intermediate-mass spheroids, 2014, MNRAS, 443, 1861
- 2. Bernardi, M., Meert, A., Vikram, V., Huertas-Company, M., Mei, S., Shankar, F., Sheth, R. K., Systematic effects on the size-luminosity relations of early- and late-type galaxies: dependence on model fitting and morphology, 2014, MNRAS, 443, 874
- 3. Cerulo, P., Couch, W. J., Lidman, C., Delaive, L., Demarco, R., Huertas-Company, M., Mei, S., Sanchez-Janssen, R., The Morphological Transformation of Red-Sequence Galaxies in the Distant Cluster XMMU J1229+0151, 2014, MNRAS, 439, 2790

2013

1. Bernardi, M., Meert, A., Sheth, R. K., Vikram, V., Huertas-Company, M., Mei, S., Shankar, F., The massive end of the luminosity and stellar mass functions: dependence on the fit to the light profile, 2013, MNRAS, 436, 697
2. Shankar, F., Marulli, F., Bernardi, M., Mei, S., Meert, A., Vikram, V., Size Evolution of Spheroids in a Hierarchical Universe, 2013, MNRAS, 428, 109
3. Huertas-Company, M., Mei, S., Shankar, Francesco, Delaye, Lauriane, Raichoor, Anand, Covone, Giovanni, Finoguenov, Alexis, Kneib, Jean-Paul, Le Fèvre, Olivier, Povic, Mirjana, The evolution of the mass-size relation for early-type galaxies from $z \sim 1$ to the present: dependence on environment, mass range and detailed morphology, 2013, MNRAS, 428, 171

2012

1. George, Matthew R., Leauthaud, Alexie, Bundy, Kevin, Finoguenov, Alexis, Ma, Chung-Pei, Rykoff, Eli S., Tinker, Jeremy L., Wechsler, Ris H., Massey, Richard, Mei, S., Galaxies in X-ray Groups II: A Weak Lensing Study of Halo Centering, 2012, ApJ, 757, 2
2. Mei, S., Stanford, A. S., Holden, B.P., Raichoor, A., Postman, M., Nakata, F., Finoguenov, A., Ford, H.C., Illingworth, G., Kodama, T., Rosati, P., Tanaka, M., Huertas-Company, M., Rettura, A., Shankar, Carrasco, E. R., Demarco, R., Eisenhardt, P. R.M., Jee, J.M., Koyama, Y., White, R.L., Early-type galaxies at $z = 1.3$. I. The Lynx: morphology and color-magnitude relation, 2012, ApJ, 754, 141
3. Raichoor, A., Mei, S., Stanford, S. A., Holden, B. P., Nakata, F., P., Shankar, F., Tanaka, M., Ford, H., Huertas-Company, M., Illingworth, G., Kodama, T., Postman, M., Rettura, A., Blakeslee, J. P., Demarco, R., Jee, M. J., White, R. L., Early-type Galaxies at $z \sim 1.3$. IV. Scaling Relations in Different Environments, 2012, ApJ, 745, 130

Pole “Interstellar medium and plasma”

**20% of the publications - (see all publications at
<https://lerma.obspm.fr/spip.php?article351>)**

2016

1. Arnault P., Di Molfetta G., Brachet M., Debbasch F., 2016, “Quantum walks and non-Abelian discrete gauge theory”, Phys. Rev. A, 94:012335
2. Bron E., Le Petit F., Le Bourlot J., 2016, “Efficient ortho-para conversion of H₂ on interstellar grain surfaces”, A&A, 588, A27
3. Chevance M., Madden S.C., Lebouteiller V., Godard B., Cormier D., Galliano F., Hony S., Indebetouw R., Le Bourlot J., Lee M.-Y., Le Petit F., Pellegrini E., Roueff E., Wu R., 2016, “A milestone toward understanding PDR properties in the extreme environment of LMC-30 Doradus”, A&A, 590, A36
4. Delahaye F., Zwölf C.M., Zeippen C.J., Mendoza C., 2016, “IPOPV2 online service for the generation of opacity tables”, J. Quant. Spec. Radiat. Transf., 171:66-72.
5. Gerin M., Neufeld D.A., Goicoechea J.R., 2016, “Interstellar Hydrides”, ARAA, 54, 181
6. Gusdorf A., Güsten R., Menten K.M., ..., Pineau des Forêts G., et al., 2016, “Challenging shock models with SOFIA OH observations in the high-mass star-forming region Cepheus A”, A&A, 585, 45
7. Lee M.-Y., Madden S.C., Lebouteiller V., Gusdorf A., Godard B., Wu R., ..., Le Petit F., Roueff E., ..., Le Bourlot J., ..., Lesaffre P., et al., 2016, “Radiative and mechanical feedback into the molecular gas in the Large Magellanic Cloud. I. N159W”, A&A 596, 85
8. Lefèvre C., Pagani L., Min M., Poteet C., Whittet D., 2016, “On the importance of scattering at 8 μm: Brighter than you think”, A&A, 585, L4
9. Le Petit F., Ruaud M., Bron E., Godard B., Roueff E., Languignon D., Le Bourlot J., 2016, “Physical conditions in the central molecular zone inferred by H₃⁺”, A&A, 585, A105
10. Lis D.C., Wootten A., Gérin M., Pagani L., Roueff E., van der Tak F.F.S., Vastel C., Walmsley C.M., 2016, “Star Formation and Feedback: A Molecular Outflow–Prestellar Core Interaction in L1689N”, ApJ, 827, 133

11. Louvet F., Dougados C., **Cabrit S.**, Hales A., Pinte C., Ménard F., et al., 2016, "ALMA observations of the Th 28 protostellar disk. A new example of counter-rotation between disk and optical jet", *A&A*, 596, A88
12. Schmiedeke A., Schilke P., Möller T., Sánchez-Monge A., Bergin E., Comito C., Csengeri T., **Lis D.C.**, Molinari S., Qin S.-L., Rolffs R., 2016, "The Physical and Chemical Structure of Sagittarius B2. I. Three-Dimensional Thermal Dust and Free-Free Continuum Modeling on 100 AU to 45 pc Scales", *A&A*, 588, 143
13. Planck Collaboration, 2016, "Planck 2015 results. I. Overview of products and scientific results", *A&A* 594, A1
14. Planck Collaboration, 2016, "Planck intermediate results. XXX. The angular power spectrum of polarized dust emission at intermediate and high Galactic latitudes", *A&A* 586, A133
15. Planck Collaboration, 2016, "Planck 2015 results. XXVIII. The Planck catalogue of Galactic cold clumps", *A&A* 594, A28
16. Planck Collaboration, 2016, "Planck intermediate results. XXXII. The relative orientation between the magnetic field and structures traced by interstellar dust", *A&A* 586, A135
17. Planck Collaboration, 2016, "Planck intermediate results. XXXV. Probing the role of magnetic field in the formation of structure in molecular clouds", *A&A* 586, A138
18. Planck Collaboration, 2016, "Planck intermediate results. XXXIII. Signature of the magnetic field geometry of interstellar filaments in dust polarization maps", *A&A* 586, A136
19. **Yvart W., Cabrit S., Pineau des Forêts G., Ferreira J.**, 2016, "Molecule survival in magnetized protostellar disk winds. II. Predicted H₂O line profiles versus Herschel/HIFI observations", *A&A*, 585, A74

2015

1. Bialy S., Sternberg A., Lee M.-Y., **Le Petit F., Roueff E.**, 2015, "HI-to-H₂ Transitions in the Perseus Molecular Cloud", *ApJ*, 809, 122
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Pole "Instrumentation and remote sensing"

**20% of the publications - (see all publications at:
<https://lerma.obspm.fr/spip.php?article342>)**

2017

1. **Aires, F., L. Miolane, C. Prigent, E. Fluet-Chouinard, B. Lehner, and F. Papa,** A global, long-term and high spatial resolution inundation extent database, *J. Hydrology*, in press, 2017.
2. **Wang, D., C. Prigent, L. Kilic, S. Fox, C. Harlow, C. Jimenez, F. Aires, C. Grassoti, F. Karbou,** Surface emissivity at microwaves to millimeter waves over polar regions: parameterization and evaluation with aircraft experiments, *J. Atmos. Ocean. Tech.*, in press, 2017.

2016

1. **Defrance, F., M. Casaletti, J. Sarrazin, M. C. Wiedner, H. Gibson, G. Gay, R. Lefèvre, Y. Delorme,** Structured surface reflector design for oblique incidence beam splitter at 610 GHz, *Optics Express*, 24, 118, 2016.
2. **Moro-Melgar, D., A. Maestrini, J. Treuttel, L. Gatilova,** T. González, B. G. Vasallo & J. Mateos. "Monte Carlo Study of 2-D Capacitance Fringing Effects in GaAs Planar Schottky Diodes". *IEEE Transactions on Electron Devices*, 63, 10, 3900-3907, 2016.
3. **Prigent, C., F. Aires, D. Wang, S. Fox, C. Harlow,** Sea surface emissivity parameterization from microwaves to millimeter waves, *Quart. J. Royal Meteo. Soc.*, 10.1002/qj.2953, 2016.
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2. **Prigent, C., D. P. Lettenmaier, F. Aires, and F. Papa,** Towards a high-resolution monitoring of continental surface water extent and dynamics, at global scale: from GIEMS (Global Inundation Extent fromMulti-Satellites) to SWOT (Surface Water Ocean Topography), *Survey Geophys.*, DOI: 10.1007/s10712-015-9339-x, 2015.

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Direction / édition scientifique

- F. Combes** is an Editor at Astronomy & Astrophysics
- F. Dulieu** is an Editor at Molecular Astrophysics (Elsevier)

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- Jesus **Vega Ferrero**, 2015 « Formation des étoiles dans les environnements de basse densité de gaz et basse métallicité »
- Quentin **Salomé**, 2016 AGN feedback and triggered star formation
- Raj Laxmi **Singh**, 2017, « Strong radiative shocks relevant for stellar environments: experimental study and numerical approach »
- Gwendoline **Stephan**, 2016, « Modeling chemistry in massive star forming regions with internal PDRs »
- Uddhab **Chaulagain**, 2015, « Radiative shocks: experiments, modelling and links to Astrophysics »
- Do Thi **Hoai**, 2015, « Etude en radio des enveloppes circumstellaires d'étoiles géantes rouges »
- Charlène **Lefèvre**, 2015, « Le coreshine: un phénomène et un outil »
- Guiseppe **di Molfetta**, 2015, « Discrete time quantum walks: from synthetic gauge fields to spontaneous equilibration »
- Georgios **Momferratos**, 2015, « The sites of extreme turbulent dissipation in the diffuse ISM: structure and properties »
- Raphael **Raynaud**, 2015, « Modélisation numérique du magnétisme solaire et stellaire »
- Valeska **Valdivia**, 2015, « Impact of Radiative Transfer and Chemistry on the Formation of Molecular Clouds»
- Emeric **Bron**, 2014, «Stochastic Processes in the InterStellar Medium »
- Lionel **de Sa**, 2014, « Accrétion sur les étoiles jeunes : modélisation hydrodynamique radiative »
- Viviana **Guzman Veloso**, 2013, « Physical and Chemical Conditions in the Horsehead Photodissociation Region »
- Jacques **Masson**, 2013, « Etude des effets de la magnétohydrodynamique non idéale sur la formation des étoiles de faible masse »
- Etienne **Morey**, 2013, « Excitation dynamique et structuration des disques de débris soumis à l'interaction gravitationnelle de planètes et d'étoiles voisines »
- Walter **Yvart**, 2013, « Signatures Moléculaires dans les vents de disque MHD des étoiles de faible masse »
- Emmanuel **Jacquet**, 2012, « Les solides du système solaire primitif : géochimie et dynamique »

- Marc Joos**, 2012, « Effondrement et fragmentation des cœurs denses prestellaires : Étude de la formation des disques protostellaires »
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- Brouet**, Y., « Contribution à la détermination de la permittivité des astéroïdes et des noyaux cométaires », 19/09/2013.
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- D. Fraix-Burnet and **D. Valls-Gabaud**. Methods and application of regression in astrophysics. EAS Vol 66, 2014 les séries annuelles.
- The Chalonge-de Vega Meudon Workshop 2015: "Warm Dark Matter Cosmology in agreement with observations: CMB, Galaxies, Black holes, and Sterile neutrinos". Juin 2015, CIAS, Château de Meudon, Observatoire de Paris at Meudon.
- The 19th Paris Cosmology Colloquium Chalonge-de Vega 2015: "Latest News from the Universe: Warm Dark Matter Cosmology: CMB, Dark Matter, Dark Energy and Sterile Neutrinos". Juillet 2015, Observatoire de Paris, historic Perrault building.

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- **Stehlé C.**, d'Hendecourt L., Joblin C., 2012, " European Conference on Laboratory Astrophysics", EAS Pub. Ser. 58
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- **Té, Y., Jeseck, P.** and Hadji-Lazaro, J. (2012) "CO seasonal variability and trend over Paris megacity using ground-based QualAir FTS and satellite IASI-MetOp measurements", ESA Publications, SP708.
- **Wiedner, M.**, The OST heterodyne instrument study invited talk at THz Heterodyne Array Workshop, 9-11 March 2017, Nunspeet, the Netherlands.
- Garrett, J., **F. Boussaha**, B-K. Tan, C. Chaumont and G. Yassin, "A 230 GHz Finline SIS Receiver with Wide IF Bandwidth," 27th International symposium on space Terahertz Technology, Nanjing, China, April, 2016.
- **Maestrini, A., L. Gatilova, J. Treuttel, F. Yang, Y. Jin, A. Cavanna, D. Moro Melgar, F. Tamazouzt, T. Vacelet, A. Féret, F. Dauplay, J-M. Krieg, C. Goldstein**, 1200GHz and 600GHz Schottky receivers for JUICE-SWI, oral presentation, to appear in the proceedings of the 27th International Symposium on Space Terahertz Technology 2016, ISSTT 2016, Nanjing, China, 12-15 April 2016.
- **Zhou, K. M.**, W. Miao, S. C. Shi, **R. Lefevre et Y. Delorme**, "Noise Temperature and IF Bandwidth of a 1.4 THz Superconducting HEB Mixer", URSI Asia-Pacific Radio Science, Seoul, 2016.
- **Gay, G., Y. Delorme, M. Wiedner, R. Lefèvre, F. Defrance, T. Vacelet, A. Féret, M. Ba-trung, F. Dauplay, L. Pelay and J.-M. Krieg**, "Development of Membrane Based Quasi-optical HEB Mixers at 1.4 THz", in the proceedings of the 26th International Symposium on Space Terahertz Technology, March 2015.
- **Gatilova, L., J. Treuttel, F. Yang, T. Vacelet, C. Goldstein, A. Maestrini, and Y. Jin** , "THz Schottky Diode MMICs for Astronomy and the Physics of the Atmosphere", proceedings of the 25th International Symposium on Space Terahertz Technology 2014, ISSTT 2014, Moscow, Russia, 27-30 April 2014.
- **Lefèvre, R., G. Gay, A. Féret, T. Vacelet, F. Defrance, F. Dauplay, M. Wiedner, and Y. Delorme**, "THz heterodyne receivers based on NbN hot electron bolometer mixers" in the proceedings of the 5th International Symposium on Terahertz Nanosciences, Schoelcher, Martinique, France, December 2014.

Autres produits présentés dans des colloques / congrès et des séminaires de recherche

4. Développements instrumentaux et méthodologiques

Prototypes et démonstrateurs

- Expérience de chocs lancés par puissance électrique pulsée (LPP/LERMA)
- 2014 : Prototype de mélangeur HEB pour le télescope DATA5 pour l'Antarctique
- 2015 : Démonstrateur du canal 600GHz de l'instrument JUICE-SWI
- 2015 : Prototype de global phase grating pour réseau de détection hétérodyne
- 2016 : Démonstrateur du canal 1200GHz de l'instrument JUICE-SWI.
- 2017 : Récepteur hétérodyne pour la spectroscopie moléculaire

Plateformes et observatoires

On the roof of the Jussieu Paris 6 University, and in the Garden of Paris Observatory, building, organisation and operation of a plateform of optical telescopes and radio antennae, for the HI-21cm emission of the Milky Way (**A-L Melchior, P. Salomé**)

FTS-PARIS - high spectral resolution Fourier-Transform Spectrometer (Bruker IFS 125HR) coupled to a sun-tracker for continuous remote-sensing of atmospheric species (FTS-Paris, spectral range from 233 nm to 22 μm). Since 2014, the instrument is part of TCCON (the total carbon column observing network).

Instrument characteristics:

Form factor: 280 cm x 250 cm

Max range: 450 – 28000 cm^{-1}

Max path difference: 258 cm

Resolution: 0.0024 cm^{-1}

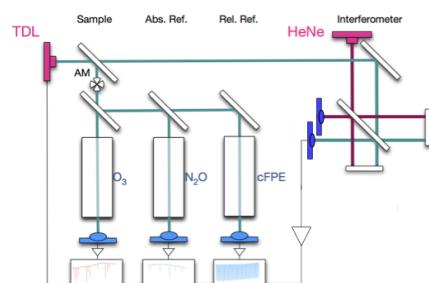
Products: The TCCON data (CO₂, CH₄, N₂O, HF, CO, H₂O, and HDO) are traceable and referenced to the WMO standard. Data are made available on the TCCON web site (<http://tccon.ornl.gov/>).



MIS-DL –Michelson interferometer stabilized diode laser. The instrument has been upgraded in 2011 and installed during 2012/2013. It consists out of a tunable laser source (TDL) coupled to a Michelson interferometer which is stabilized by a HeNe laser. Spectra over the DL tuning rates can be obtained at high spectral resolution.

Instrument characteristics:

- Depending on light source, can be used between 1 and 15 μm
- Tuning range depends on laser, typical a few cm^{-1}
- Rel. frequency precision < 5 10⁻⁹ @ 30 min

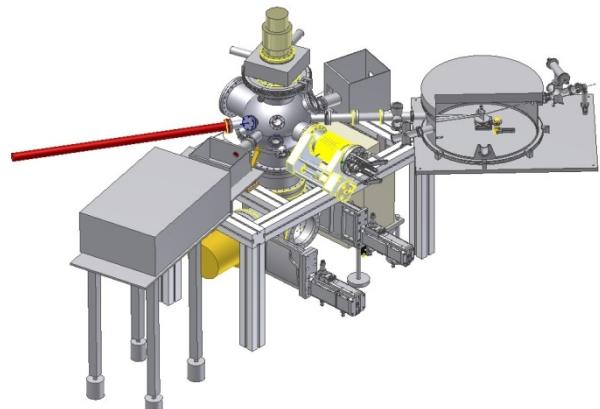


Développements 2012-2017

SPICES2 (Surface Processes and ICES) - Instrument development from Sept. 2015. First experiments from July 2016.

Main chamber:

- UHV set-up with turbomolecular, ionic and titanium sublimation pumping systems.
- Rotatable homemade 3-faces cold surface holder (10-350K) cooled by closed-He cryostat, with temperature control to 0.1 K precision.
- Ice growth system with precision and reproducibility better than 0.1 monolayer.
- Mobile setup designed for the study of thermal and non-thermal desorption of molecular ices.



Light sources:

- At the laboratory: OPO and Dye-laser for high harmonic generation of laser pulses in the VUV range and multiphoton ionization spectroscopy in the UV range.
- Mobile and adaptable with window-free coupling to synchrotron beamline in the VUV (SOLEIL/DESIRS beamline) and X-ray (SOLEIL/SEXTANTS beamline) energy range.

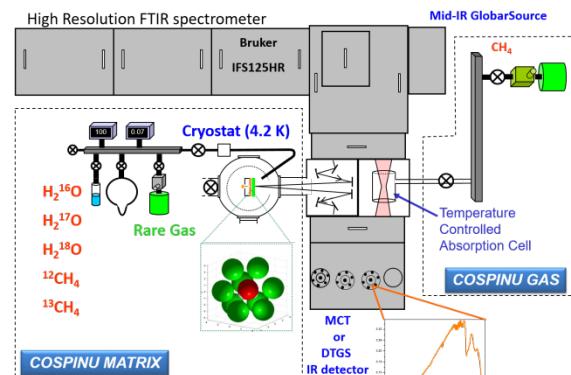
Diagnostics:

- Infrared Reflection Absorption Spectroscopy (RAIRS) – Bruker vec22 Spectrometer
- High sensitivity Mass Spectrometry for neutral and ionic species (QMS Balzer QE200, EQS1000 Hiden), with kinetic energy resolution.

COSPINU (COversion de SPIIn NUcléaire) - Instrument development from 2009 dedicated to IR diagnostic of nuclear spin species equilibration of molecules in rare gas solid and solid-gas interface at low temperature (down to 4 K)

Sample chambers:

- Low temperature (4K-300 K) cryostat under secondary vacuum (COSPINU MATRIX)
- Low temperature copper absorption cell (10 K – 300 K) with windows made of CaF₂ (COSPINU GAS)
- Temperature control with 0.01 K resolution



Irradiation sources:

- Infrared Dye laser (visible to 5 mm wavelength)

Diagnostics:

- High Resolution Fourier Transform InfraRed Absorption Spectroscopy – Bruker IFS125 Spectrometer under high vacuum (10^{-6} mbar)

VENUS – Instrument development: 2012-2015. UHV set-up. Cold surface sample (7-350K). Up to 5 atomic or molecular beams. Of these, 4 are calibrated and presently running. Detection system: 1) Mass spectrometry for beam composition, exposure detection, Thermally Programmed Desorption, and determination of the internal energy of atoms and molecules. The sensitivity is 0.05 ML. 2) Reflection Absorption Infra Red Spectroscopy with a sensitivity of 0.1ML for the strongest IR bands (i.e.CO₂).

HCERES

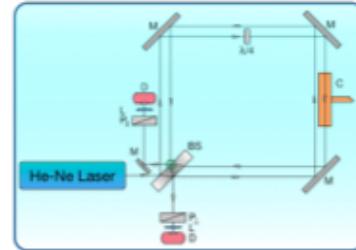
Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

Évaluation des unités de recherche
Novembre 2016

CI-PLM – Circular Interferometer for path length measurements 2013-2014. First measurements in 2015. The instrument is dedicated to contact free precision measurements of path lengths in short absorption cells and has been set up in support of the measurement of absolute absorption cross sections (Elandaloussi, H., P. Marie-Jeanne, C. Rouillé and C. Janssen (2016) *Appl. Opt.* 55, 1971-1977, doi:10.1364/AO.55.001971).

Characteristics:

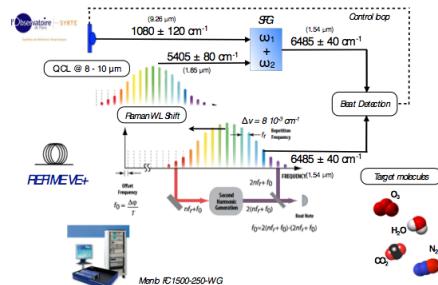
- HeNe laser based open path circular interferometer
- Form factor: 160 cm x 100 cm
- adapted for path length measurements between 1 and 20 cm.
- 16 μm accuracy at the 95% confidence level



FCS-QCL – Frequency comb stabilized quantum cascade laser. The setup has started in 2014 and is still under way. The instrument will serve as a high-resolution spectrometer for the study of molecular processes in planetary atmospheres and the solar system (**PRESPASS**) by providing fundamental spectroscopic data for isotope studies from space for a series of molecules, in particular for ozone and other oxygen containing species.

Characteristics:

- Two frequency combs: @ 1.542 and 1.860 μm
- Form factor: 300 cm x 120 cm
- FSR 250 MHz
- QCL @ 1050 cm^{-1}
- connection to REFIMEVE+ frequency reference



5. Produits et outils informatiques

Logiciels

Reference Catalog of galaxy SEDs

<http://rcsed.sai.msu.ru/>, The Observatory will host a mirror via PADC/VO.

https://fr.wikipedia.org/wiki/Reference_Catalog_of_galaxy_Spectral_Energy_Distribution

Plateforme MIS & Jets sur le site du Paris Data Center (Le Petit, Cabrit, Godard, Gusdorf, Languignon, Le Bourlot, Roueff, et al.): <https://ism.obspm.fr/>

IRIS: code de transfert radiatif 3D (**L. Ibgui**)

PHARE: code hybride 3D (**M. Drouin**)

PDR code: <http://pdr.obspm.fr> (version PDR 1.5.2 released in 2016; ANO5, **F. Le Petit**)

Shock code with UV radiation field (**A. Gusdorf, P. Lesaffre**, et al.) available to the community through <https://ism.obspm.fr>

CHEMSES: code for following the chemistry in the ISM (**P. Lesaffre**)

The Software Development Team (SDT) has designed and developed standards and software for building and operating the VAMDC infrastructure during the VAMDC and the SUP@VAMDC grant periods. The interoperability between about 35 different heterogeneous atomic and molecular databases has been achieved. (<http://www.vamdc.org/activities/researc>).

The team also:

- provides software and tools for processing and handling the data extracted from VAMDC (<http://www.vamdc.org/activities/research/software>) for a variety of different communities
- keeps the VAMDC infrastructure operating and checks that all core components (portal, registries, query store, nodes, species database, institutional web site) work properly.

A host of software tools was produced and is maintained by the SDT.

Software name	Scope	Description
Java Node Software	Building the VAMDC infrastructure	Wrapper for transforming an autonomous database into a member of the VAMDC infrastructure.
Portal	Building the VAMDC infrastructure. Final user tool	Provide a central entry point to all the VAMDC infrastructure
Processors – XSAMS converters	Final user tools	A set of tools for post-processing the data extracted from VAMDC.
TAP-validator	Quality tool	Check if the output from VAMDC is compliant with the defined standards.
SpecView	Final User Tool	Specview was an already existing tool for displaying spectra. A direct access to the VAMDC data has been added.
Spectcol	Final User tool	A tool for displaying collisional data extracted from VAMDC and Basecol and for quantum number matching between collisional and spectroscopic data.
Query Store	Final User tool	Implementation of the RDA Data Citation Recommendation on the VAMDC infrastructure.
Species DataBase	Final User tool. Quality tool	A set of web services for gathering all the species existing in the infrastructure nodes in one place
Core libraries	Building the VAMDC infrastructure	Low-level libraries for parsing and processing queries and data.

The SDT is deeply involved in the definition of the international standards related to data sharing (<http://www.vamdc.org/activities/research/documents/standards/>) and participates in the IVOA (<http://ivoa.net>) and RDA activities (<https://www.rd-alliance.org>). The maintained software constantly

evolves and new one is created for fitting with the new standards (e.g. the Query Store software is being developed for meeting the RDA recommendation on data citation).

The SDT is in charge of the development of the BASECOL database. Since 2004 this service provides the community with high quality collisional data and it is actually being renewed for including the latest internet technology and improving the quality of the data curation workflow.

TELSEM²: Tool to Estimate Land Surface Emissivity at Microwaves and Millimeter waves. Un software distribué à la communauté et qui fait partie du code de transfert communautaire RTTOV utilisé par les météorologies opérationnelles (ECMWF, Météo-France).

TESSEM²: Tool to Estimate Sea Surface Emissivity at Microwaves and Millimeter waves. Un software distribué à la communauté et qui fait partie du code de transfert communautaire RTTOV utilisé par les météorologies opérationnelles (ECMWF, Météo-France).

Bases de données / cohortes

GALMER data base: library of numerical simulations of galaxy interactions and mergers galmer.obspm.fr, part of the theoretical Virtual Observatory

"Pôle de diffusion de données de physique atomique et moléculaire" (AN05; **F. Delahaye**)

All data collected by the Herschel telescope in the framework of the PRISMAS key project (PI: **M.~Gerin**) have been reduced, delivered to ESA, and subsequently made available to the scientific community (PRISMAS database; **A. Gusdorf**):

<https://www.cosmos.esa.int/web/herschel/user-provided-data-products>

Global Inundation Estimate from Multi-Satellites (GIEMS) et GIEMS-D3. Mise à disposition de la communauté de bases de données d'inondation sur 15 ans en moyenne mensuelle, à la résolution de 25km (GIEMS) et de 90m (GIEMS D3).

Several molecular data bases are maintained and developed:

BASECOL: database on ro-vibrational excitation through molecular collisions (**M. L. Dubernet**)

MOLAT: molecular data base (**L. Tchang-Brillet, N. Moreau**)

STARK-B: database of atomic and ionic lines due to collisions with electrons and ions (**S. Sahal-Bréchot, N. Moreau**)

Tiptop base: access to atomic data provided by the international IRON and Opacity projects (**F. Delahaye, N. Moreau**)

Sesam: molecular spectroscopy database for electronic spectra of diatomic molecules (**E. Roueff, N. Moreau**)

VAMDC: electronic infrastructure and standard for the exchange of atomic and molecular data (**ML Dubernet & team**)

ISMDB: Database of astrochemical models (PDR, ...) with advanced tools for data mining and interpretation of observations (**F. Le Petit, D. Languignon**)

Corpus

Outils présentés dans le cadre de compétitions de solveurs

Outils d'aide à la décision

6. Brevets, licences et déclarations d'invention

Une licence de savoir-faire en cours avec la société d'Estellus depuis 2009.

7. Rapports d'expertises techniques, produits des instances de normalisation

The gas calibration cell of the IASI meteorological satellite (CNES) has been filled and characterized according to specifications (PI **P. Jeseck**):

P. Jeseck, Y. Té, D. Koshelev, C. Janssen « Rapport du LERMA sur le remplissage de la cellule IASI »

C. Janssen has coauthored the GAW Report No. 218 of the WMO: Absorption Cross-Sections of Ozone (ACSO), Status Report, June 2015, http://www.wmo.int/pages/prog/arep/gaw/documents/DRAFT_GAW_218a.pdf

Idem.

8. Produits des activités didactiques

Ouvrages

E-learning, moocs, cours multimedia, etc.

- Lectures in College de France, all video downloadable on the website: <http://www.college-de-france.fr>
- « Peser l'Univers » (premier MOOC de l'Observatoire de Paris, **E. Bron**, et al.):
<https://www.fun-mooc.fr/courses/OBSPM/62001/session01/about>
- The IAU Dictionary of Astronomical Concepts (**M. Heydari-Malayeri**):
<http://dictionary.obspm.fr/>
- Comètes : des mythes à la réalité (**J. Lequeux** & L. Bobis): <http://cometes.obspm.fr/fr>
- Le site anniversaire des 350 ans de l'Observatoire de Paris (**J. Lequeux, L. Pagani**, et al.):
<http://350ans.obspm.fr/fr>
- Different courses and possible program usable with the inflatable planetarium located in Cergy are gathered on <http://ama09.u-cergy.fr/>
- Lectures and exercises for numerous courses on the Master and Licence level (atomic and molecular physics, electromagnetism, quanta and relativity, "Ateliers de Recherche Encadrés" etc.) are available on the e-learning portal web (SAKAI) of UPMC.

9. Produits destinés au grand public

Émissions radio, TV, presse écrite

- F. Combes:** France Culture, La méthode des Sciences, La conversation scientifique, Trait pour Trait, l'éloge du savoir (**F. Combes**)
- N Sanchez:** Univ de Paris, and Ambassade de la République d'Argentine en France,
- Interviews en Radio France International Paris (2012, 2016), TV 2015 La Plata (Citoyens Illustres) , TV Buenos Aires, "L'Univers")
- Lis, D. :** PiK Polskie Radio, Torun, Poland, September 26, 2016:
<http://www.radiopik.pl/54,583,audycja-z-26-wrzesnia-2016>
- Biraud, F., **Heydari-Malayeri, M.**, 2014, "Le calendrier de trente-trois ans", L'Astronomie, janvier 2014: <http://aramis.obspm.fr/~heydari/divers/biraud-mhm-Astronomie.pdf>
- Godard, B., Falgarone, E., Cabrit, S. :** « Tornades interstellaires: des usines à molécules », Sciences et Avenir, nov. 2013: https://www.sciencesetavenir.fr/espace/tornades-interstellaires-des-usines-a-molecules_23064
- Heydari-Malayeri, M. :** Plus de 115 émissions télévisées hebdomadaires d'environ 15 minutes disponibles sur: https://www.youtube.com/results?search_query=heydari-malayeri
- Heydari-Malayeri, M.**, 2013, "Sharafeddin Tusi (1135-1213), mathématicien astronome", L'Astronomie, Décembre 2013: <http://aramis.obspm.fr/~heydari/divers/sharaf-astro.pdf>
- Lestrade, J.F. :** Communiqués de Presse ESA, CNES, INSU: <https://sciences-techniques.cnes.fr/fr/web/CNES-fr/10608-st-2012-une-ceinture-de-cometes-autour-d-un-systeme-planetaire.php>; <http://www.insu.cnrs.fr/node/4072>
- C. Prigent** : 'A quoi servent les zones humides ?' Emission autours de la question sur RFI le 23/02/2017. invitée.
- Y. Té** : Chronique Sciences "L'observatoire des gaz à effet de serre de l'Université de Jussieu", Radio France Internationale (RFI), Interview for the public French radio broadcast at TCCON-Paris in September 2015

Produits de vulgarisation : articles, interviews, éditions, vidéos, etc.

- Numerous Conferences for the public, Bar des Sciences
- Cycles de » Table Rondes et Conférences de Culture Scientifique » au siège de l'Ambassade d'Argentine à Paris, avec le concours du Ministère des Relations Extérieures d'Argentine, dont:
- L'Univers de ses origines à nos jours, les ondes gravitationnelles primordiales et polarisation du CMB, Juin 2012
- Le temps dans l'Univers: une histoire de 13.700 millions d'années, Déc. 2014
- Où va la Science ?, Nov. 2016
- Cosmologie des ondes gravitationnelles, comprendre l'importance et les conséquences scientifiques de leur détection, Janvier 2017
- Les radiations cosmiques et leurs impacts interdisciplinaires, Janvier 2017
- Lis, D.:** *Narodziny światów. Z prochu powstałeś... czyli chemia kosmosu.* **D.C. Lis**, A. Karska, and E.F. van Dishoeck, *Urania*, 1/2017 (787) (2017; Invited popular science cover article).
- Cabrit, S:** video interview on Water in the Universe (www.herschel.fr/Phoebe/Video/index.php?id=31)
- Cabrit, S. :** Invited seminar on Star Formation at the Festival « Sciences en Campagne » (Nonards 2013)
- M. Gerin & D. Bockelée Morvan** « L'eau dans l'univers » in Constructif March 2016 « Les promesses de l'eau ».

HCERES

Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

Évaluation des unités de recherche
Novembre 2016

Members of the Molecules in the Universe team have been responsible for the development and installation of the astronomical instrumentation at the "maison du soleil" at Saint Veran in the South of France. The installation includes a coelostat, a complete panoramic view of a sunset and a high resolution solar spectrum (shown at right). "La maison du soleil" is open to the public and receives many scholars and students every day.



Numerous conferences for the public, especially toward scholars (**E. Congiu, F. Dulieu...**) have been given. LERMA-Cergy owns an inflatable planetarium which is used at many of these occasions. The picture figures a visit at Ecole d'Enery in January 2017.



Produits de médiation scientifique

Débats science et société

- Séance ‘Système solaire’ à l’Académie des Sciences organisée par P. Encrenaz (29/03/2016).
- Séance « La fantastique aventure de ROSETTA sur la comète », à l’Académie des Sciences (P. Encrenaz et F. Combes le 24/10/2016)
- Conférence de Pierre Encrenaz sur Titan et Saturne au Musée des Phares et Balises (2x120 participants), Ouessant Nuit des Etoiles (04/08/2016),
- Conférence de Pierre Encrenaz sur Saturne et Titan le 07/10/2016 à St Pierre des Corps au Lycée Vaucanson (250 participants).

10. Autres produits propres à une discipline

Créations artistiques théorisées

Mises en scènes

Films

II. ACTIVITÉS DE RECHERCHE ET INDICES DE RECONNAISSANCE

La liste de ces activités n'a pas à être exhaustive. On mettra en évidence les activités les plus significatives en termes de rayonnement et d'attractivité, d'interaction avec l'environnement et d'implication dans la formation par la recherche.

1. Activités éditoriales

Participation à des comités éditoriaux (revues, collections)

F. Combes, Editor of Astronomy & Astrophysics (since 2003)

E. Falgarone, Member of the Planck Editorial Board

F. Dulieu, Editor for Molecular Astrophysics (Elsevier)

Direction de collections et de séries

2. Activités d'évaluation

Responsabilités au sein d'instances d'évaluation

- Several Committees, like Time Allocation Committee: IRAM, ALMA, Herschel, HST, CFHT, ESO, LOFAR
- Participation to the ANR, and ERC Advanced Grant evaluation
- D. Lis**: Stratospheric Observatory for Infrared Astronomy, US and German TAC (2014 – 2015).
- D. Lis**: NASA, Astrophysics Theory Program, ISM Panel (2014).
- S. Cabrit** : Scientific Evaluation Committee of the Programme National de l'INSU "Physique et Chimie du Milieu Interstellaire" (2011-2016)
- S. Cabrit**: Organizing committee of IAU Commission 34 "Interstellar Medium" (2007-2015)
- S. Cabrit**: Member of recruitment committees for Paris 6 and Paris 11 universities (2012-2016)
- A. Ciardi**: Member of the Scientific council of the PNPS ("PN de Physique et Stellaire");
- E. Falgarone** : Membre du comité des programmes LOFAR; member du comité de selection des Junior Research Chairs of the ICFP-ENS; membre du Herschel Users Group.
- M. Gerin**: Scientific Evaluation Committee of the Programme National de l'INSU "Physique et Chimie du Milieu Interstellaire" (2011-2014)
- M. Gerin**: ALMA Time allocation committee (2013,2014,2016)
- M. Gerin**: Member of recruitment committees for ENS and for Paris 11 university (2012-2016)
- M. Gerin**: Scientific council DIM ACAV (2012 – 2016)
- M. Gerin**: Scientific Advisory Committee (IRAM)
- A. Gusdorf**: ALMA TAC (2016-2018 inc.): ALMA review panel, science category 3: ISM, star formation and astrochemistry
- A. Gusdorf**: Member of the federative action committee 'CTA', Paris Observatory
- F. Le Petit**: Member of the Scientific council of the PCMI ("Physique et Chimie du Milieu Interstellaire"); member of the CNAP ("Conseil National des Astronomes et des Physiciens")
- F. Lévrrier**: Member of the Scientific council of the PCMI ("Physique et Chimie du Milieu Interstellaire"); member of the IRAM TAC ("Time Allocation Committee")
- C. Stehlé**: Member of recruitment committees for Paris 6 and Paris 11 universities (2014, 2016)
 - Expert poste de Directeur de recherche FRS-FNRS 2012, Belgique
 - Membre du la CAP Directeurs de Recherche du CNRS (2010-2014)
 - Membre de la Commission Spécialisée Astronomie et Astrophysique de l'INSU (2003-2014)

HCERES

Haut conseil de l'évaluation de la recherche
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Évaluation des unités de recherche
Novembre 2016

- Membre du Conseil Scientifique de l'INSU (2010-2014)
- Membre du Directoire de la Recherche de l'UPMC (2012-2015)
- **M. Bertin** is member of the expert panel for the interdisciplinary Program Advisory Committee (iPAC) of the Grand Accélérateur National d'Ions Lourds GANIL (Caen – France), where he evaluates beamtime applications.
- **M. Bertin** is member of the scientific council DIMACAV+ (2017-)
- **J.-H. Fillion** is member of recruitments and expert committees of CNU section 28, 39, 30 (UPMC, Univ. Rennes)
- **J.-H. Fillion** is deputy-director of the national CNRS program « Physics and Chemistry of the Interstellar Medium”
- **J.-H. Fillion** is member of the scientific council of the Labex MiChem
- **C. Janssen** has been member of the scientific council of Labex L-IPSL
- **A. Maestrini**, member of the Committee on Space Astronomy and Astrophysics (CSAA) depuis 2014.
- **L. Tchang-Brillet**, member of the scientific council of Labex MiChem

Évaluation d'articles et d'ouvrages scientifiques

Several articles per week refereed in high-impact professional journals:

- A&A, MNRAS, ApJ, Nature, Nature Astronomy
- J. Chem. Phys., Astron. Astrophys., Mol. Phys., Chem. Phys. Lett., J. Quant. Spectrosc. Radiat. Transfer, Astrophys. J., J. Mol. Spectrosc., J. Phys. B, Nucl. Instrum. Meth. A, Phys. Chem. Chem. Phys., J. Phys. Chem., A & C., J. Geophys. Rev., Geophys. Res. Lett., Atmos. Meas. Techn., Atmos. Chem. Phys., Appl. Opt., Few Body Sys., J. Appl. Meteorol. Climatol.
- Dans le groupe Télédétection, nombreuses revues de papiers par F. Aires, C. Jimenez et C. Prigent. Plus de 12 revues par an et par personne.

Évaluation de laboratoires (type Hceres)

- **F. Combes**: Chair of the AERES panel for Lyon (CRAL) Observatory, Participation to the HCERES of CEREGE (Marseille)

Évaluation de projets de recherche

- Numerous solicitations to evaluate research grants: Canada, Chile, Germany, Austria, UK
- **S. Cabrit**: Evaluations for ANR projects, bi-lateral projects (e.g., Brasil), University funded projects (e.g., U. Joseph-Fourier).
- **M. Gerin**: Evaluation for NWO, CONICYT, ERC
- Numerous solicitations for evaluating national and international research grants: USA, Poland, Czech Republic, France, Germany, United Kingdom.
- **C. Janssen** is external evaluation expert for the DAAD (Germany) and the Humboldt foundation (Germany).
- **J-H Fillion**: Evaluations for the Royal Society (Newton International and University research Fellowships), Simon Foundation fellow (New York), ANR.

- 2014 ALMA Band 1 Receiver Delta PDR, Shin'ichiro, ... M. Wiedner
- 2016 ALMA Band 1 Receiver CDR, Lopez,, M. Wiedner
- 2016 ALMA Band 1 First Local Oscillator and WCA Mechanical Structure Critical Design and Manufacturing Readiness, Vasco Cortez, Alvaro Gonzalez, Giorgio Siringo, Takanobu Shimoda, Pavel Yagoubov, Ming-Jye Wang, Martina Wiedner
- Dans le groupe télédétection, plusieurs revues par an pour le TOSCA, pour le PNTS, pour l'ANR, pour des agences étrangères (NERC, NASA, agences suédoise, belge...)

3. Activités d'expertise scientifique

Activités de consultant

F. Aires et C. Prigent sont experts auprès de la société Estellus qu'ils ont fondé (Statut 25.2).
Idem.

Participation à des instances d'expertises (type Anses) ou de normalisation

C. Janssen is an invited member of the international CCQM GAWG Ozone Cross Section Task Group, led by Dr. J. Hodges (chair, NIST) and Dr. J. Viallon (secretary, BIPM) for recommending a value and uncertainty for the ozone cross section at 253.65 nm to be used in ozone reference photometers and for comparisons of these standards in BIPM.QM-K1.

Expertise juridique

4. Organisation de colloques / congrès

- The Epoch of Reionization: Theory-Simulations-Observations*, conférence internationale, Strasbourg, Avril 2012. **B. Semelin**, Co-chair.
- Cosmology and first light*, conférence internationale, Paris, Dec 2015. **B. Semelin** Membre du LOC et du SOC.
- Cosmic dawn of galaxy formation: linking observations and theory with new-generation spectral models*, conférence internationale, Paris, Juin 2016. **F. Combes, membre du SOC**, **B. Semelin Membre du LOC**.
- European Week of Astrophysics and Space Science*: EWASS 2012, Roma, Italy, **F. Combes Chair** of SOC, EWASS 2014, Geneva, Switzerland, **F. Combes** member of SOC, EWASS 2015, Teneriffe, Spain **F. Combes** member of SOC, EWASS 2016, Athens, Grece, **F. Combes** member of SOC
- IAU-2015 General Assembly in Hawaii: Symposia 315*, **F. Combes** member of SOC, Division J meeting, **F. Combes Chair** of SOC
- Drifting through the Cosmic Web: Marseille*, 6-11 July 2015, **F. Combes** member of SOC
- The origin of the Hubble sequence*: 75th anniversary Conf, IAP, 24-28 June 2013, **F. Combes** member of SOC
- The physics of groups and galaxies properties therein*, IAP Paris 12-15 December 2016, **F. Combes** member of SOC
- Annual Workshop Chalone*: Cosmology and dark matter , **N. G. Sanchez & H. de Vega**, main organisers
- The Milky Way and its environment*, IAP, 2016, **D. Valls-Gabaud**, member of SOC
- Magnetic Fields in the Universe V : From laboratory and stars to primordial structures*”, Institut d'Etudes Scientifiques de Cargèse, 2015, **E. Falgarone and P. Lesaffre** SOC co-chairs
- Scale-free processes in the Universe*, IAU General Assembly Hawaii, 2015, **E. Falgarone and B.G. Elmegreen** SOC co-chairs
- Betelgeuse Workshop* 2012, Paris Observatory, Nov. 26-29, 2012
- European Conference on Laboratory Astrophysics*, Paris, Sep. 26-30, 2012
- C+ as an astronomical tool* , Lorentz Center, Leiden, February 2013 (SOC)
- Interstellar and Circumstellar Magnetic Fields*, SF2A, Montpellier, June 2013 (SOC)
- NOEMA science*, SF2A Paris, June 2014 (SOC)

- Biannual PCMI National Conference Paris 2012, Rennes 2014, Lille 2016 (SOC)*
- Science with a 10m Cooled FIR Space Telescope: A millimetron wokshop.* Paris June 2014
- Workshop CSIC-CNRS.* Madrid September 2015 (co-Chair)
- International Conference Connecting Accretion and Outflows in Young Stellar Objects,* Noordwijk, NL, 27-29 Oct 2015
- Workshop on Laboratory Astrophysics,* Lyon 2016
- Workshop in memoriam of JP Chièze,* Paris 2016
- Workshop on Hybrid and PIC Simulations / PHARE Kick-off Meeting,* Paris 2016
- Future prospects for Far-Infrared Space Astrophysics,* Symposium at EWASS 2016, Athens
- The interplay between turbulence and micro-physical processes,* Special session at EWASS 2016, Athens
- Cosmic rays and the interstellar medium,* SF2A, Lyon, June 2016 (chair)
- International Conference *Blowing in the Wind,* Quy Nhon, Vietnam, 8-12 Aug 2016
- Betelgeuse Workshop 2016,* Paris Observatory, Sept 2016
- SHOCKS2016 conference,* Torun, September 2016 (SOC)
- International Workshop *Shocks 2016,* Torun, Poland, 13-16 Sept 2016
- International Conference *The Hydrides Toolbox,* Paris, 12-15 Dec 2016

- Organisation of Mini-colloquium *Laboratory Astrophysics* at the 24th general congress of the Société Française de Physique in Orsay (July 3-7, 2017).
- Organisation of *Annual international NDACC-IRWG & TCCON meeting* in Paris (May 29 – June 2, 2017), LOC and SOC
- Organisation of *Journée validation des missions spatiales Gaz à Effet de Serre (CO₂ et CH₄)* in Paris (May 11, 2017)
- Organisation of *Complex Organic Molecules in Space* in Neuville (February 8-10, 2017)
- Organisation of International Conference *Hydride Toolbox* in Paris (Dec 12-15, 2016)
- Organisation of *Journée de l'Ecole Doctorale Sciences et Ingénierie* in Neuville (June 23, 2016)
- Organisation of Mini-colloquium *Frequency combs for high precision molecular spectroscopy* at the SFP/SFO PAMO-JSM meeting in Bordeaux (July 4-7, 2016).
- Organisation of *H2 formation on interstellar dust grains* in Arcachon (June 7-9, 2016)
- Organisation of *Multiple facets of interstellar dust grains* colloquium in Neuville (May 10, 2016)
- Organisation (chair) of the General Colloquium of the National program “Physique et Chimie du Milieu Interstellaire” (PCMI) in Paris. (Nov 19-21, 2012)
- Organisation of Workshop on *non-thermal desorption*, COST CM1401, Faro, Portugal (Jan 20, 2017)
- Organisation of Workshop *Science with a 10 m Cooled FIR Space Telescope, Workshop for the Millimetron Space Observatory*, Paris (June 16-18, 2014)
- Organisation of Mini-colloquium *Pollution atmosphérique : bilan et perspectives* in Metz (July 3-6, 2012)
- Member of Scientific Committee of *General colloquium of national program CNRS-INSU Physique et chimie du milieu Interstellaire*, Paris (Nov 19-21, 2012) , Rennes (19-21 Nov 2014), Lille (Oct 24-28,2016).
- Member of Scientific Committee of *European Conference on Laboratory Astrophysics: Gas on the rocks*, Spain, (Nov, 21-25, 2016)
- Member of Scientific Committee of *Laser Optics*, St. Petersburg/ Russia, (June 27-July 1, 2016).
- Member of Scientific Committee of *TDLS 2015*, Moscow/Russia. (July 6-10, 2015).
- Member of Scientific Committee of *Laser Optics*, St. Petersburg/ Russia, (June 30-July 4, 2014).
- Member of Scientific Committee of *TDLS 2013*, Moscow/Russia. (June 16-21, 2013).

- Member of Scientific Committee of *2nd int. workshop on spectroscopy and dynamics of ozone and related atmospheric species*, Reims, France, (Oct 2-4, 2013).
- Member of LOC, 19th International Conference on Atomic Processes in Plasmas (APiP), 4-8 April 2016 (Paris), L Tchang-Brillet

- Organisation d'un workshop ISMAR pour la préparation de l'instrument Ice Cloud Imager sur MetOp-SG à l'Observatoire de Paris, 28-30 septembre 2015. 20 participants.

5. Post-doctorants et chercheurs accueillis

4-5 post-docs every year in average, financed by ANR, ERC, or PSL-Observatoire de Paris

- L. Ibgui, postdoc ANR STARSHOCK, nov. 2009-nov. 2012: étude des chocs d'accrétion sur les étoiles de type T Tauri, transfert radiatif 3D.
- T. Matsakos, postdoc ANR STARSHOCK, sept. 2013-aug. 2014: Simulation 3D des chocs d'accrétion sur les étoiles de type T Tauri
- P.T. Nhung, postdoc IN2P3, sep.-dec. 2013, aug.-nov. 2014
- A. Stan, postdoc Plas@Par, a multi-group radiation magnetohydrodynamics code for high energy density plasmas, sep. 2014 - apr. 2017
- G. Momferratos / S. Beyene 2015-2016 “Collimation of jets via a large scale poloidal magnetic field”
- Emeric Bron, post-doc (post-doc: 1.10.2014-31.12.2015)
- Benoit Comercon (post-doc: 1.10.2011-30.09.2013)
- Natalia Dzyurkewich (post-doc: 1.10.2012- 31.08.2015)
- Takado Endo (post-doc: 1.10.2015-31.03.2016)
- Fernando Garcia Gonzales (post-doc: 1.09.2013-31.08.2014)
- Benjamin Godard (post-doc: 1.01.2014-31.08.2014)
- Antoine Gusdorf (post-doc: 1.12.2011- 30.09.2016)
- A. Heays : PSL post-doc (2016-2018)
- Marco Padovani (post-doc: 1.06.2012-28.02.2014)
- Aurélie Ruyer (post-doc : 1.03.2014-31.12.2014)
- R. Wu: ANR post-doc: 1.07.2016-30.06.2017
- A. Raga, Plas@Par invited expert, May 2016 (1 month) “Simulations of time-variable jets”
- Shih-Ping Lai, Professor at University of Hsinchu, Taiwan (June 2016),
- Ren-Shiang-Sung, Ph.D. student at University of Hsinchu, Taiwan, June 2016
- Rafael Rodriguez Perez, Plas@Par invited expert 2015
- Petros Tzeferacos, Plas@Par invited expert 2015
- Ivan Hubeny, Plas@Par invited expert (2012: 1.5 month; 2014: 1 month)
- Sergey Lebedev, Plas@Par invited expert 2014
- Milan Dimitrijevic, Plas@Par invited expert; 2012: 1.5 month, 2013: 1.5 month, 2014: 0.5 month, 2015: 1 month, 2017: 1 month
- José Cernicharo (Invited professor; 2014: 1 month)
- Javier Goicoechea (Invited Professor, 2014: 1 month))
- Martin Houde (Invited Professor, 2016 : 1 month)
- Peter Davidson (Invited Professor, 2015: 1 month)
- Julien Devriendt (Invited Professor; 2015 : 1 month)
- Renan Barkana (Invited Professor, 2014: 1 month)
- Paul Goldsmith (Invited Professor, 2014: 1 month)
- Paul Ho (Invited Professor 2015: 1 month)
- David Neufeld (Invited Professor, 2017: 1 month)

- Tuan Anh Pham (vacant OP position; 2017: 1 month)
- Invitation thanks to the **Institute of Advance Studies** in Cergy: 2015:
- Anton Vassyunin, (MPE Garching), 2015,
- Albert Rimola (A. Univ. of Barcelona), 2016
- Vianey Taquet (Univ. Leiden and Arcetri Observatory) invited for 3 weeks by IEA Cergy, 2017
- E. Quintas-Sanchez (post-doc, 18 months), 2016-2015
- F. Daniel (post-doc, 3 months), 2016
- A. Semenov (PhD, 3 months, Marquette University, USA),
- M. Doronin (post-doc, 2 months) 2015
- G. Wang (researcher of Chinese Academy of Sciences, 1 month,) 2013
- M. Ivanov (researcher, Marquette University, 4 months)
- M Minnissale (post-doc, 11 months) 2014-2015:
- Alexander Ryabtsv (Spectroscopy Institut, Troitsk, Russia, 5 weeks) 2012 & 2017
- Roger Hutton (Fudan University, Shanghai, China, 1 month), 2016
- Djamel Deghiche (Tizi-Ouzou University, Algeria).
- Mourad Sabri (Tizi-Ouzou University, Algeria).
- Ali Meftah (Tizi-Ouzou University, Algeria). Invited 1 month/year (2012-2016)
- Octobre 2016 : Séjour de Kangmin Zhou, chercheur du Purple Mountain Observatory, au LERMA pendant 2 semaines. Financement : LIA-Origins
- Juillet 2015 : Séjour de Wei Miao, chercheur du Purple Mountain Observatory, au LERMA pendant 1 semaine. Financement : PICS
- Décembre 2014 : Séjour de Wei Miao, chercheur du Purple Mountain Observatory, au LERMA pendant 2 semaines. Financement : PICS
- Novembre 2013 : Séjour de Wei Miao, chercheur du Purple Mountain Observatory, au LERMA pendant 2 semaines. Financement : PICS

6. Stagiaires accueillis

Années	Master 2/Ecole ingénieur	Master 1	BTS/Licence/ Prépa	Lycée	Collège	TOTAL
2012	7	5	7	5	7	31
2013	13	6	10	4	7	40
2014	9	6	12	5	1	33
2015	7	12	22	8	9	58
2016	13	3	8	5	9	38
2017	8	9	17	1	6	41
TOTAL	57	41	76	28	39	241

7. Interactions avec les acteurs socio-économiques

Contrats de R&D avec des industriels

- 2016 "Prestation de services pour composants HEB" / SAINTY MACHINERY I/E Co Ltd
Contrat No 16MCD(5)-0030958FR
- 2016 "Technical investigation about 8 to 10K cryocooler" / SAINTY MACHINERY I/E Co Ltd
Contrat No16CNRS60
- 2017: "664GHz anti-parallel pair of Schottky diodes for MetOp-Sg space program" en collaboration avec le C2N / Radiometer Physics GmbH

Bourses Cifre

Bourse de thèse CIFRE de Victor Pellet (CIFRE financée par Estellus). 2015-2018

Créations de laboratoires communs avec une / des entreprise(s)

Création de réseaux ou d'unités mixtes technologiques

Créations d'entreprises, de start-up

Estellus a été créée en 2009 et travaille toujours en collaboration étroite avec le LERMA.

7. Contrats de recherche financés par des institutions publiques ou caritatives

Contrats européens (ERC, H2020, etc.) et internationaux (NSF, JSPS, NIH, Banque mondiale, FAO , etc.)

ERC-Momentum, 2011-2015: 2.35 Meuros (**F. Combes**)

D. Valls-Gabaud was awarded an International Team on the "Ultra-low surface brightness universe" by the International Space Sciences Institute (Bern, Switzerland)

ERC MIST, 2017-2022: 2.5 M€ (**E. Falgarone**)

ITN LASSIE 2011-2014, (<http://lassie.u-cergy.fr/>)

ITN INTRAMIF 2009-2013 (<http://www.projects.science.uu.nl/atmosphereclimate/intramif/>)

FP7 e-science Infrastructure 2009-2012 (<http://vamdc.eu>; <http://www.vamdc-project.vamdc.eu/>)

FP7 e-science Infrastructure support action 2012-2014 (<http://vamdc.eu>;
<http://www.sup-vamdc.vamdc.org/>)

UE:

- 2017-2019 "Radionet-AETHRA" / Grant Agreement number: 730562 - RadioNet — H2020-INFRAIA-2016-
- 2017/H2020-INFRAIA-2016-1
- 2012-2016 "Radionet-AETHER" / FP7 Grant Agreement number: 283393 - Radionet3 - Advanced Radioastronomy in Europe - INFRA-2011-1.1.21

ESA:

- 2014-2016 "Terahertz Receiver Technology for Future Science Missions" / Omnisys Subcontract No. AFA-SCO-002
- 2015-2017 "2THz Mixer" / ESA Contract No.4000115255/15/NL/AF

EUMETSAT:

- 2015 'Study on surface emissivity at microwave and sub-millimeter frequencies'

CNRS :

PICS 06413 (2013-2016) *Photodésorption VUV à la surface de glaces* (France/Pays-bas)
PICS 4343 (2015-2017) *Physics of Mass Accretion Processes in Young Stars* (France Italie),

HCERES

Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

Évaluation des unités de recherche
Novembre 2016

- PICS (2013-2015) *Systèmes de détection hétérodyne THz à bolomètre à électrons chauds pour des expériences embarquées*
PICS (2017-2019) *Développement d'un réseau de mélangeurs HEB à 1.5 THz pour le télescope (DATE 5) au Dôme A*

Contrats nationaux (ANR, PHRC, FUI, INCA, etc.)

ANR: LIDAU (2009-2012), VACOUL (2011-2014), ORAGE (2014-2018), LYRICS (2017-2021), ASTROBRAIN (2017-2019),

LABEX: ILP, Univ-Earth,

CNRS Programs: PNCG, ASA, PCMI, SKA-LOFAR

ANR: IMOLAB (2014-2017+), SILAMPA (2013-2016), STARSHOCK (2009-2014), SYMPATICO (2012-2015)

CNRS National Programs: PCMI, PNPS, PNP, ASA, AS SKA-LOFAR

PHC/ORCHID 2016/2017 (financing of travel exchanges with Taiwan)

ANR: GASOSPIN (2009-2014), IDEO (2009-2014), SUMOSTAI (2009-2012)

Member of ANR LABEX MiChem FIRST-TF, L-IPSL

Member of ANR EQUIPEX REFIMEVE+

CNES : TOSCA : MicCARB (2017-2018)

Projet CNES :

2013-2017 "JUICE-SWI Phases A-B" / Convention CNES/INSU N° 131425/00

2012-2014 "CIDRE Etude de phase A" / Convention CNES/INSU N° 116370

2014-2017 'Exploitation des observations ISMAR dans le cadre de la préparation à ICI sur MetOp-SG', projet TOSCA CNES

2014-2017 'Methode de sélection de canaux pour la haute résolution spectrale infrarouge (IASI)', projet TOSCA CNES.

2016. 'Préparation mission CFOSAT', participation à la proposition collective TOSCA CNES.

2014-2015 'Space-based Optical Lightning Detection - PREparation, VALidation and Support (SOLID) projet TOSCA CNES

2017- 'Analyse conjointe de la rétrodiffusion et des émissivités microondes des surfaces continentales, pour l'amélioration de l'estimation des précipitations', projet TOSCA CNES

R&T CNES:

2016-2018 "Systèmes THz hétérodynes compacts" / Action de R&T : R-S15/SU-0002-057

2016-2018 "Development of multipixel heterodyne arrays at THz frequencies for future space missions" / Action de R&T : R-S16/SU-0002-094

2014-2016 "Mélangeurs et Multiplicateurs de Fréquence Schottky THz Atmosphériques & Astronomiques" / Action de R&T : R-S14/OT-0002069

2012-2015 "OL pour caméra hétérodyne THz" / Action de R&T : R-S12/SU-0002-073

ANR:

2014-2018 IMOLABS/ ANR-13-BS05-0008-01

PNTS :

2017- 'Préparation MICROWAT'.

Contrats avec les collectivités territoriales

DIM-ACAV - Petits et moyens équipements : IR spectrometer and atomic beams for VENUS (2), and contribution to frequency comb experiment : FCS-QCL (1) , SPICES II « Surface Processes and ICES» II (3)

DIM-ACAV - Postdoc: *Isotope effects in ozone synthesis*

DIM-ACAV - Postdoc: *Mesure des populations de spin nucléaire de molécules hydrogénées d'intérêt astrophysique à l'interface solide-gaz à basse température*

HORS-DIM 2015 - Thesis : Installation et validation du site TCCON-Paris pour l'observation du CO₂ parisien et pour la validation des mesures spatiales XCO₂ au-dessus des mégapoles

Contrats financés dans le cadre du PIA

LABEX: Plas@Par (pilotage et dotations)

PhD fellowship: *Adsorption on Interstellar Analog Surfaces: from Atoms to Organic Molecules* (Labex MiChem 2012-2015)

Support for instrumental development: *Surface Processes and ICES II* (Labex MiChem 2013-2014)

Support for instrumental development: *ISOfotope quantification by combining NEw Spectroscopic Techniques ISONEST* (Labex MiChem 2015-2016)

Support for instrumental development: *Towards high resolution studies of molecular lines based on IR laser spectroscopy with QCLs stabilized to optical Femto combs* (Labex FIRST-TF 2017)

Support for instrumental development: *Development of very high resolution spectrometers based on QCL for high-precision molecular spectroscopy* (Labex FIRST-TF 2015)

PHD fellowship: *Chemical origin of N₂ and CO differential depletion in prestellar cores: observations and laboratory investigations.* (Labex MiChem 2013-2017)

Support for instrumental development: LabEx Plas@Par (ANR-11-IDEX-0004-02)

Contrats financés par des associations caritatives et des fondations (ARC, FMR, FRM, etc.)

8. Indices de reconnaissance

Prix

F. Combes: R.M. Petrie Prize of the Canadian Astronomical Society (2013) Award of the Three Scientists, ENS (2012)

A. Ciardi: Visiting Academic status at Imperial College London

D. Lis: 2014 NASA Group Achievement Award, *U.S. Herschel HIFI Instrument Team*

Distinctions

F. Combes: Honorary member of AAS (2017) – Officier de la Légion d'Honneur (2015) – Honorary Member of SF2A (2015) – Honorary Fellow of the Royal Astronomical Society (2013)

ML. Dubernet : Chevalier de la Légion d'Honneur (2017 ; pour prendre rang à compter de la reception dans le grade)

2015 NASA Goddard Space Flight Center Robert H. Goddard award for the Global Precipitation Measurement (GPM) algorithm team for outstanding precipitation retrieval algorithm development to

support the GPM mission, pour **F. Aires et C. Prigent**

2015 NASA group achievement award to the Global Precipitation Measurement post-launch team ‘for exceeding all expectations for GPM operations, data processing, algorithm performance, science impact, and education and public outreach within one year after launch’, pour **F. Aires et C. Prigent**

2015, **A. Maestrini**, Prix du Best Paper Award des proceedings de l’ ESA 36th Antenna Workshop on Antennas and RF Systems for Space Science, ESTEC, Noordwijk, The Netherlands, 06-09 October.

Responsabilités dans des sociétés savantes

F. Combes is Chair of Universe Sciences Section of French Academy (2016) and was President of COFUSI (French Committee of International Scientific Unions) until 2015.

D. Valls-Gabaud was elected Vice-President of the Societe Astronomique de France (2012-)

A. Ciardi: Board Member of the European Physical Society, Division of Plasma Physics

D. Lis: NASA, Cosmic Origin Program Analysis Group (COPAG), Far Infrared Science Interest Group, Leadership Council.

Invitations à des colloques / congrès à l'étranger, séjours dans des laboratoires étrangers

D. Valls-Gabaud was elected an Overseas Fellow of Churchill College, Cambridge, UK (2015-). *He was also awarded a Visiting Professorship for Senior International Scientists by the Chinese Academy of Sciences (2013-2015).*

2016

- **Cabrit, S.**: *Wind models vs Observations of outflows*. Conference “Shocks 2016: Interstellar Shocks: Models, Observations, and Experiments”, Toruń, Poland (Sept. 2016; Invited review).
- **Cabrit, S.**: *Jets, outflows and disc winds*. “Blowing in the Wind », Quy Nhon, Vietnam, (8-12 Aug 2016, Invited review)
- **Ciardì, A.**: Conference “Shocks 2016: Interstellar Shocks: Models, Observations, and Experiments”, Toruń, Poland (Sept. 2016; Invited review).
- **E. Falgarone**: *Star formation, magnetic fields and diffuse matter in the Galaxy*, Madison, USA; *The local truth: star formation and feedback in the SOFIA era*, Asilomar, USA; *Advances in Geophysical and Astrophysical Turbulence*, Institut d’Etudes Scientifiques de Cargèse, France.
- **Gusdorf, A.** : Comparing observations with models of interstellar shocks: successes and limitations Conference “Shocks 2016: Interstellar Shocks: Models, Observations, and Experiments”, Toruń, Poland, September 2016 (Invited review).
- **Gusdorf, A.** : Gas-dust interactions in shock regions: the interplay between laboratory astrophysics, models and observations “European Week for Astrophysics and Space Science, S08: Interstellar dust and gas coupling: linking observations, models and laboratory astrophysics”, Athens, Greece, August 2016, (Invited review)
- **Lis, D.**: *Building Stars, Planets, and Basic Ingredients of Life in Space*. Conference Shocks 2016: Interstellar Shocks: Models, Observations, and Experiments, Toruń, Poland (Sept. 2016; Invited public lecture).
- **Lis, D.**: *Hydrides in Space: From Herschel to ALMA*. Symposium to Honor Prof. Jacek Krełowski, Toruń, Poland (June 2016).
- **Lis, D.**: *Far-Infrared Astrophysics after Herschel*. Universities Space Research Association, Baltimore, MD (May 2016).

2015

- **Cabrit, S.**: *Concluding remarks. The Accretion/Outflow Connection in YSOs: Exchanging Mass, Momentum and Ideas* (ESTEC, Noordwijk, NL, Octobre 2015; invited speaker)
- **Ciardi, A.**, LaB workshop, Princeton, USA
- **Falgarone E.**, *Interstellar Magnetic Fields*, Toulouse, France; *A celebration in honor of Nick Scoville*, Hawaii, USA
- **Gerin** “Diffuse clouds as low-density PDRs” in “30 years of photodissociation regions, a symposium to honor David Hollenbach's lifetime in science” Asilomar July 2015
- **Gerin** “The Barnard 1b core: a template object for star formation and astrochemistry” Workshop CSIC/CNRS Madrid September 2015
- **Gusdorf, A.**: Interstellar shocks: the SOFIA/GREAT contribution, “SOFIA tele-talk series”, November 2015
- **Gusdorf, A.**: Interstellar shocks: the SOFIA/GREAT contribution, “Conditions and impacts
- **Lis, D.**: *Far-Infrared Spectroscopy and Astrochemistry after Herschel*. Far-Infrared Surveyor Workshop, Pasadena, CA (June 2015).
- **Stehlé, S.**: ELI Beamlines and Hilase Summer School, Aug. 23-28, 2015, Prague, Laboratory Astrophysics
- **Cabrit, S.**, 1 month visit at the Astronomical Observatory of Santiago de Chile (May 2015)

2014

- **Ciardi, A.**: High-Energy Density Laboratory Astrophysics (HEDLA), Bordeaux, France
- **Ciardi, A.**: European Physical Society Conference on Plasma Physics, Berlin, Germany
- **U. Chaulagain, C. Stehlé**, J. Larour, M. Kozlova, F. Suzuki- Vidal, M. Cotelo, P. Velarde, R., Rodriguez Perez, P. Barroso, **L. de-Sa, L. Ibgui, J. P. Chieze, A. Ciardi**, “Laser experiments on Radiative Shocks relevant to Stellar Accretion”, 10th International Conference on High Energy Density Laboratory Astrophysics (HEDLA -2014), Bordeaux, 12-16, May 2014
- **de Sa L., Chièze J.-P., Stehlé C.**, et al., Accretion shock stability on a dynamically heated YSO atmosphere with radiative transfer, Edited by: Bozzo, E; Kretschmar, P; Audard, M; et al., Conference: Conference on Physics at the Magnetospheric Boundary, Univ Geneva, Fac Sci Geneva, Switzerland, June 25-28, 2013 Physics at the magnetospheric boundary, Book Series: EPJ, Web of Conferences Volume: 64 Article Number: 04002 Published: 2014
- **E. Falgarone**, *From the MRI to the Sun, a conference for S. Balbus's 60th birthday*, Chamonix, France; *Turbulence: in the Sky as on the Earth*, International Institute of Physics, Natal, Brésil; *Early Phases of Star Formation: Connecting small and large scales*, Ringberg, Allemagne.
- **M. Gerin** “Shock tracers” in Chemical Diagnostics in the ALMA/NOEMA Era, Heidelberg July 2014
- **M. Gerin** “Determination of nuclear spin ratios in diffuse gas: current observations and future prospects” Workshop on Nuclear Spin Effects in Astrochemistry, Gothenburg, Sweden (June 2014).
- **Gusdorf, A.**: Irradiated shocks in the massive star-forming region W28 A2, “colloque PCMI”, Rennes, France, October 2014
- **Gusdorf, A.**: Characterizing shocks in the ALMA/NOEMA era, “Chemical diagnosis in the ALMA/NOEMA era”, Heidelberg, Germany, July 2014
- **Gusdorf, A.**: Irradiated shocks in the W28A2 massive star-forming region: sites for CR acceleration?, “Cosmic Rays and the Interstellar Medium”, Montpellier, France, June 2014
- **Gusdorf, A.**: A hands on session with the Paris-Durham shock model, “The interaction of stars with the interstellar medium of galaxies”, École des Houches, Les Houches, France, April 2014

- **Lis, D.**: *Water in the Solar System as Seen by Herschel*. 2014 Gothenburg Lise Meitner Award Symposium to Honor Ewine van Dishoeck, Gothenburg, Sweden (September 2014).
- **Lis, D.**: *Herschel/HIFI Measurements of the Ortho-to-Para Ratio in Interstellar Water*. Workshop on Nuclear Spin Effects in Astrochemistry, Gothenburg, Sweden (June 2014).

2013

- **Cabrit, S.**, 3-week visit at the Astronomical Observatory of Santiago de Chile (January 2013)
- Frank, A., Ray, T. P., **Cabrit, S. (speaker)**, et al., « *Jets and Outflows from Star to Cloud: Observations Confront Theory* », Invited Review Chapter in « Protostars & Planets VI » Conference, Heidelberg, July 2013
- **Sahal-Bréchot S.**, M. S. Dimitrijević, N. Ben Nessib, N. Moreau, IX Serbian Conference On Spectral Line Shapes in Astrophysics, Banja Koviljaca, May 13 – 17, 2013, “Stark-B database as a resource for "Stark" widths and shifts data: state of advancement and program of development”, publié in Journal of Advanced Space Research
- **Chaulagain U.**, C. Stehlé, J. Larour, M. Kozlova, F. Suzuki- Vidal, L. de-Sa, L. Ibgui, A. Ciardi, An experiment to study Radiative Shocks relevant to Astrophysics at PALS Facility, International conference on Black holes, jets & outflows, Kathmandu, Nepal, 14-18, Oct. 2013
- **Chaulagain U.**, C. Stehlé, M. Kozlova, J. Nejdl, J. Larour, F. Suzuki- Vidal, A. Ciardi, XUV probing of laser driven Radiative Shocks, Laserlab Europe meeting in Marseille, France, 26-27, September, 2013
- **Falgarone E.**: *Magnetic Fields in the Universe IV*, Cancun, Mexique;
- **Gerin M.** “The interstellar medium” in ngCFHT workshop, Hilo Hawaii. March 2013
- **Gerin M.** Plenary talk “Absorption Sounding of the Diffuse ISM with Herschel” in The Universe explored by Herschel, Noordwijk October 2013
- **Gusdorf, A.**: Irradiated shocks in W28 A2, “The universe explored by Herschel”, Noordwijk, Holland, October 2013
- **Gusdorf, A.**: The molecular emission from shocked regions in supernova remnants “Supernova environmental impacts, IAU 296”, Raichak, India, January 2013
- **Sahal-Bréchot S.**, M. S. Dimitrijević, N. Ben Nessib, N. Moreau, IX Serbian Conference On Spectral Line Shapes in Astrophysics, Banja Koviljaca, May 13 – 17, 2013, “Stark-B database as a resource for "Stark" widths and shifts data: state of advancement and program of development”, publi in Journal of Advanced Space Research
- L. de Sa, T. Matsakos, L. Ibgui, J.P. Chièze, **Stehlé, C.**, I. Hubeny, T. Lanz, M. Gonzalez, F. Delahaye “Do accretion shocks on Young Stellar Objects oscillate ?”, Conference : the frontiers of Plasma Physics and technology, Gaborone, 2013, Botswana (C. Stehlé invitée et oratrice)

2012

- **Cabrit, S.**: “*Shock diagnostics in the Herschel era*”, Symposium « The astrochemical universe unveiled with Herschel », EWASS 2012 (Rome; invited review).
- **Falgarone, E.**: *The chemical cosmos, Catania, Sicile, Turbulence, Transport, Transfer, Transformation*, Budapest, Hongrie; *Modern views of the Interstellar Medium*, IAU GA, Pékin, Chine
- **Gerin, M.**: “Molecule formation in the diffuse interstellar medium, lessons from Herschel”, Symposium « The astrochemical universe unveiled with Herschel », EWASS 2012 (Rome; invited review).
- **Gerin, M.**: The Galactic ISM in Workshop “The Milky Way: Stars, Gas, Dust and Magnetic Fields in 3D”, Heidelberg 2012.
- **Gusdorf, A.**: CO emission in shocked regions: observations and models, « Exciting CO in the

local and high-redshift Universe », Leiden, Holland, February 2012

- **Gusdorf, A.**: Interstellar shocks, “SOFIA summer school”, Köln, Germany, February 2012
- **Sahal-Bréchot, S.**: International Conference on Spectral Line Shapes (ICSLS), 2012, 3-6 June, St-Petersburg, Russia, invited talk, “*Virtual Laboratory Astrophysics: the STARK-B database for spectral line broadening by collisions with charged particles and its link to VAMDC*”, publié
- **Sahal-Bréchot, S.**: Regional Workshop On Atomic And Molecular Data, Belgrade, Serbia, June 14-16, 2012, (workshop européen du VAMDC), invited talk, “*The STARK-B database for spectral line broadening by collisions with charged particles*”, non publié
- Milan S. Dimitrijević, **Sylvie Sahal-Bréchot**, Darko Jevremović, Andjelka Kovačević, Veljko Vujičić, Luka Č. Popović, and VAMDC consortium (P.I. Marie-Lise Dubernet) : VIII Serbian-Bulgarian Astronomical Conference (VIII SBAC) Leskovac, Serbia, May 8-12, 2012, “*Virtual Atomic And Molecular Data Center And Stark-B Database 2010-2012*”, invited lecture

Pôle “Molecules in the universe”: During the evaluation period, different team members have been invited speakers on more than 50 international conferences and workshops

2017

- **Leach, S.** : “C60 : de Henri Szwarc aux étoiles”, Journée hommage à Henri Szwarc “Une physico-chimie pionnière à Orsay”, May 4 , 2017, Orsay (France).
- **Michaut, X., Putaud, T., Moudens, A., Philippe, L., Jeseck, P., Bertin, M., Fillion, J.-H.**: Cacciani, P., Cosléou, J., Cermak, P., Pardanaud, C. “What do we know about time scales for the nuclear spin conversion in molecular ices and at the solid-gas interface?”, Nuclear Spin Effects in Astrochemistry, May 2-4 2017, Grenoble (France)
- **Leach, S.**: “In the footsteps of George Herbig: Tracing interstellar C60 by Vis-UV spectra”, Workshop on Fullerenes in Space, Apr. 9-10, 2017, Edinburgh (Scotland).
- **Janssen, C., Elandaloussi, H., Té, Y., Jeseck, P., Boursier, C., Zanon, T., Dubernet, M.L., Zwölf, C.M., Moreau, N., Ba, Y.A.**: “Molecular line parameters & VAMDC”, 2017 ESO Calibration Workshop: the second generation VLT instruments and friends, Jan. 16-19, 2017, Santiago (Chile).
- **Bertin, M., Romanzin, C., Philippe, L., Jeseck, P., Michaut, X., Fillion, J.-H.**: “Energy-resolved UV photodesorption of intact molecules and of photofragments from molecular ices” COST-action “Our chemical History” meeting – Working group 3, Jan. 2017, Faro (Portugal)

2016

- **Bertin, M., Romanzin, C., Philippe, L., Jeseck, P., Michaut, X., Ligterink, N., Linnartz, H., Fillion, J.-H.**: “UV photodesorption of small organic species” European Conference on Laboratory Astrophysics (ECLA), Nov. 2016, Madrid (Spain).
- **Tchang-Brillet, W.-Ü. L.**: “Recent Results on High Resolution VUV Emission Spectra of Moderately Charged Heavy Atomic Ions”, 10th International Conference on Atomic and Molecular Data and Their Applications (ICAMDATA2016), Sept. 25-29, 2016, Gunsan (Republic of Korea).
- **Leach, S.**: “Spectroscopy and Photobiology in the beyond”, Symposium for John Maier, Sep. 3-4, 2016, Basel (Switzerland).
- **Zwölf, C.M.**: and VAMDC consortium. “Progress on data citation within VAMDC”, 8th Research Data Alliance Plenary meeting, Sept. 2016, Denver (USA).
- **M. Bertin, M., Michaut, X., Romanzin, C., Féraud, G., Jeseck, P., Philippe, L., Linnartz H., Fillion, J.-H.**: “Laboratory study of VUV photodesorption processes of interstellar ice analogues” “Hot topic” of the European Conference on Atomic and Molecular Physics (ECAMP) 12, Sept. 2016, Frankfurt am Main (Germany).
- **Zwölf, C.M.**: and VAMDC consortium. “From RDA Data Citation Recommendations to new

paradigms for citing data from VAMDC”, RDA-UK-Workshop, Nov. 2016, Birmingham, UK

- **Dulieu, F.**: “Physical and chemical processes at the surface of cold interstellar dust grains”, 77th IUVSTA Workshop, Aug. 2016, Fuefuki (Japan).
- **Michaut, X.**, Turgeon, P.-A., Ayotte, P., Vermette, J., Peperstraete, Y., **Moudens, A.**, **Philippe, L.**, **Jeseck, P.**, **Bertin, M.**, **Fillion, J.-H.**, Pardanaud, C.: “Nuclear spin conversion of water isolated in argon matrix: Isotopic and concentration effects”, Atmosphere and Astrophysics Session, Chemistry and Physics at Low Temperatures, July 3-8, 2016, Biarritz (France).
- **Dubernet, M.L.**, **Zwölf, C. M.**, **Moreau, N.**, **Ba, Y.A.** and VAMDC Collaboration: “ Atomic and Molecular Databases, VAMDC (Virtual Atomic and Molecular Data Centre)”, ASOS12, July 2016, Sao Paulo (Brazil).
- **Janssen, C.**, **Elandaloussi, H.**, **Té, Y.**, **Jeseck, P.**, **Boursier, C.**, **Rouillé, C.**, **Zanon, T.**, **Minissale, M.**: “Ozone High-resolution spectroscopy using FTIR and TDL techniques”, Laser Optics, June 27-July 1, 2016, St. Petersburg (Russia).
- **Zwölf, C.M.**, **Moreau N.**, **Dubernet, M.L.**: “VAMDC evolution towards bridging laboratory astrophysics and astrophysics”, ECLA 2016, November 2016, Madrid (Spain).
- **Fillion, J.-H.**: “UV and X-Ray Photochemistry”, an introductory talk for the Working Group 3 for the first general meeting of the COST action “Our Chemical History”CM140, 25-29 May, Prague (Czech Republic)
- **Michaut, X.**, **Bertin, M.**, Romanzin, C., **Doronin, M.**, **Philippe, L.**, Ligterink, N., Linnartz, H., **Jeseck, P.**, **Fillion, J.-H.**: “Impact of dissociative photodesorption of ices on gas phase abundances: case of methanol and perspectives concerning nuclear spin isomers ratios of water”, Workshop Complex organic molecules in space: gas-phase routes and isotopic enrichment of the COST Action CM1401 Our Astro-Chemical History, March 7-8 2016, Pisa (Italy).
- **Dubernet, M.L.**, **Zwölf, C.M.**, **Moreau, N.**, **Ba, Y.A.**: and VAMDC Collaboration, “Achievements and Future of the Virtual Atomic and Molecular Data Centre (VAMDC)”, q-PaCE 2016, January 2016, Dhanbad (India).

2015

- **Janssen, C.**: “Precision Spectroscopy for the study of molecular processes in Planetary Atmospheres and the Solar System”, Colloque DIM ACAV, Dec. 2, 2015, Paris (France).
- **Dulieu, F.** : “Réactivité sur la surface froide des grains de poussière interstellaire”, Colloque DIM ACAV Dec. 2015, Paris (France).
- **Dulieu, F.**, **Cazaux, S.**, **Minissale, M.** et al.: “Non-energetic processes at the surface of cold grains”, Oct. 2015, Berlin (Germany).
- **Dubernet, M.L.**, **Zwölf, C.M.**, **Moreau, N.**, **Ba, Y.A.** and VAMDC Collaboration: “Atomic and Molecular Databases, VAMDC (Virtual Atomic and Molecular Data Centre) ”, IAU General Assembly, August 2015, Hawai (USA).
- **Janssen, C.**, **Elandaloussi, H.**, **Té, Y.**, **Jeseck, P.**, **Boursier, C.**, **Rouillé, C.**, **Zanon, T.**, **Minissale, M.**: “Atmospheric and Laboratory High Resolution Spectroscopy of Ozone using FTIR and TDL Techniques”, TDLS 2015, July 06-10, 2015, Moscow (Russia).
- **Feautrier, N.**: “Excitation collisionnelle de C2H et N2H+ par H2”, Workshop “Processus physico-chimiques d'intérêt astrophysique: Chimie et excitation des hydrures”, June 15-18, 2015, St Florent (France).
- **Dulieu, F.**: “Chemistry at the surface of cold grains”, MICHEM symposium, June 2015, Paris (France).
- **Dubernet, M.L.**, **Zwölf, C.M.**, **Moreau, N.**, **Ba, Y.A.** and VAMDC Collaboration: “VAMDC Consortium: A service to Astrophysics”, SF2A - 2015, June 2015, Toulouse (France)
- **Bertin, M.**, **Doronin, M.**, **Michaut, X.**, **Philippe, L.**, **Fillion, J.-H.**: “Laboratory Experiments and theory for Astrochemistry: Origin of complex molecules in Space.” Labex MiChem scientific days, June 2015, Paris (France).
- **Congiu, E.**, **Dulieu, F.**, **Chaabouni, H.**: “Laboratory evidence for isotope effects of surface processes” COST Action Our Astrochemical History - WG4 Isotope chemistry, May 28, 2015,

Prague (Czech Republic).

- **Bertin, M., Doronin, M., Michaut, X., Philippe, L., Jeseck, P., Pauzat, F., Ellinger, Y., Markovits, A., Guillemin, J.-C., Fillion, J.-H.**: "Laboratory study of thermal and non-thermal desorption processes of interstellar ices." *Kinetic Database for Astrochemistry (KIDA) conference, May 2015, Paris (France)*.
- **Zwölff, C.M.** and VAMDC consortium: "VAMDC as a use-case for the RDA data-citation Working Group", RDA EUROPE Dynamic Data Citation, 20-21 April 2015, Riva del Garda (Italy).
- **Fillion, J.-H., Fayolle, E. C., Michaut, X., Philippe, L., Romanzin, C., Öberg, K.I., Linnartz, H., Bertin, M.**: "Photon Induced Desorption of interstellar relevant ices in the VUV" Second Workshop on Experimental Laboratory Astrophysics, Feb. 23-25, 2015, Poipu, Kauai, Hawaii (USA).

2014

- **Dayou, F.**, Rivero-Santamaria, A., Duflot, D., Monnerville, M., Rubayo-Soneira, J.: "Theoretical study of the Si+OH → SiO+H reaction", 8th International Meeting on Photodynamics, Oct. 26-31, 2014, Oaxaca (Mexico).
- **Tchang-Brillet, W.-Ü L.**, Wyart, J.-F.: "Spectroscopic Properties of Moderately Charged Ions of Tungsten", Final Research Coordination Meeting, IAEA Headquarters, Oct. 6-8, 2014, Vienna (Austria).
- **Dulieu, F.**: "Physics and chemistry at the surface of cold grains" Laboratory astrophysics workshop, Oct. 2014, Bad Tabarz (Germany).
- **Fillion J.-H., Fayolle E. C., Michaut X., Philippe L., Romanzin C., Öberg K.I., Linnartz H., Bertin M.**: "Photon Induced Desorption of interstellar relevant ices in the VUV", Photon Tools for Physical Chemistry, Sept.-Oct. 2014, Beatenberg (Switzerland)
- **Fillion J.-H., Fayolle E. C., Michaut X., Doronin M., Philippe L., Rakovsky J., Romanzin C., Champion N., Öberg K.I., Linnartz H., Bertin M.**: "Wavelength resolved UV photodesorption and photochemistry of CO₂ ice", Faraday Discussion 168, Sept. 2014, Leiden (The Netherlands)
- **Leach, S.**: "Origins of Life", Conference on Self-organizing Matter and Emergence, Aug. 24-30, 2014, Brijuni (Croatie).
- **Dulieu, F.** "Chemical desorption and diffusive dust chemistry" COSPAR 40, Aug. 14, 2014, Moscow (Russia).
- **Fillion J.-H., Fayolle E. C., Michaut X., Philippe L., Romanzin C., Öberg K.I., Linnartz, H., Bertin M.**: "Wavelength dependent photodesorption of astrophysical ice analogs", 40th COSPAR scientific assembly, Aug. 2014, Moscow (Russia).
- **Dulieu, F.**: "The chemical desorption" July 2014, Leiden (The Netherlands).
- **Janssen, C., Té, Y., Jeseck, P., Boursier, C., Rouillé, Marie-Jeanne, P., Elandaloussi, H.**: "High-resolution laser absorption spectroscopy in the 10 micron window - from the laboratory to the atmosphere, Laser Optics, June 30-July 4, 2014, St. Petersburg (Russia).
- **Fillion, J.-H., Doronin, M., Bertin, M., Fayolle, E. C., Michaut, X., Philippe, L.**: "Interactions gaz-surfaces pour l'astrochimie", Journées Scientifiques du LabEx MiChem, June 20, 2014, Paris (France)
- **Fillion, J.-H., Bertin, M., Philippe, L., Jeseck, P., Michaut, X.**: "Gas-ice interaction: experimental investigations on nuclear spin-states equilibration", Nuclear Spin Effects in Astrochemistry, June 9-11, 2014, Göteborg (Sweden)
- **Tchang-Brillet, W.-Ü L., Wyart, J.-F., Champion, N., Blaess, C.**: "Laboratory determination of spectroscopic data for stellar physics", SF2A, Atelier PNPS, June 3, 2014, Paris (France).
- **Dubernet, M.L., Zwölff, C.M., Moreau, N., Ba, Y.A.** and VAMDC Collaboration: "Introduction to the Virtual Atomic and Molecular Data Centre (VAMDC)", GEISA Workshop, June 2014, Paris (France).
- **Zwölff, C.M., Dubernet, M.L., Moreau, N., Ba, Y.A.** and VAMDC Collaboration: "Experience and Feedbacks from the sustainability for the Virtual Atomic and Molecular Data Centre E-

Infrastructure", IST-Africa Workshop, May 2014, Ile Maurice

- **Congiu, E., Minissale, M., Dulieu, F.**: "Efficient diffusive mechanisms of O atoms at very low temperatures on surfaces of astrophysical interest", Faraday Discussions 168, April 8, 2014, Leiden (The Netherlands).
- **Tchang-Brillet, W.-Ü L.**: "Emission spectra of moderately charged tungsten ions and of the neighbouring isoelectronic ions", Journée Scientifique Plas@Par, Jan. 17, 2014, Paris (France).
- **Dubernet, M.L., Moreau, N., Ba, Y.A., Zwölf, C.M.**, and VAMDC Consortium: "The Virtual Atomic and Molecular Data Centre (VAMDC): Science Use Cases and the VAMDC Consortium", PCMI, October 2014, Rennes (France).

2013

- **Fillion J.-H., Bertin M., Fayolle E.C., Philippe L., Michaut X., Öberg K.I., Linnartz H.**: "Progresses in Experimental UV Photodesorption Studies from Simple Ices" Workshop Structure and Chemistry of the Interstellar medium SCHISM, Dec. 2013, Paris (France)
- **Janssen, C.**: "Precision Spectroscopy for the study of molecular processes in Planetary Atmospheres and the Solar System", Colloque DIM ACAV, Oct. 21 – 23, 2013, Paris (France).
- **Janssen, C., Simone, D., Guinet, M., Elandaloussi, H., Camy-Peyret, C., Mondelain, D., Jeseck, P., Té, Y.**: "Updates on ozone absorption cross sections and intensities: From UV (253.65 nm) to IR (10 µm) spectral regions", 2nd Int. Workshop on Spectroscopy and Dynamics of Ozone and Related Atmospheric Species, Oct. 2 – 4, 2013, Reims (France).
- **Dulieu, F.** : "Astrophysique de Laboratoire - Formation des Molécules dans l'Univers", Oct. 21-23, 2013, Paris (France).
- **Té, Y., Jeseck, P., Zanon, T., Boursier, C., Janssen, C., N. M. Deutscher, N. M., Warneke, T., Notholt, J., Lac, C., Payart, J., Dieudonné, E., Lopez, M., Schmidt, M., Xueref-Remy, I.**: "Towards a megacity TCCON / NDACC site in the center of Paris", CO2-MEGAPARIS final meeting, September 20, 2013, Paris (France).
- **Fillion, J.-H, Bertin M., Fayolle E.C., Romanzin C., Michaut X.** et al. : "UV photodesorption of interstellar ice analogues: new highlights given by tunable synchrotron radiation" 19th international vacuum Congress IVC-19, Sept. 2013, Paris (France)
- **Dubernet, M.L.**: "Virtual Atomic and Molecular Data Centre", SFP - Mini-Colloque: Low energy astrophysics, July 2013, Marseille (France).
- **Janssen, C., Elandaloussi, H., Rouillé, C., Zeng, X., Willner, H.**: "High-Resolution IR Laser Spectroscopy of Ozone Isotopomers Using A Diode Laser Stabilised by a New Interferometric Phase Frequency Emission Control, ICONO/LAT 2013, June 17-22, 2013, Moscow (Russia).
- **Janssen, C., Elandaloussi, H., Rouillé, C., Zeng, X., Willner, H.**: "High-Resolution IR Laser Spectroscopy of Ozone Isotopomers Using A Diode Laser Stabilised by a New Interferometric Phase Frequency Emission Control", TDLS 2013, June 16-21, 2013, Moscow (Russia).
- **Feautrier, N.** : "Taux de collisions pour N2H+: l'impossible défi?", Workshop "Processus physico-chimiques d'intérêt astrophysique: La chimie de l'azote", June 3-6, 2013, St Florent (France).
- **Dayou, F.** : "Astrophysique moléculaire : approches théoriques", Worksop "Processus physico-chimiques d'intérêt astrophysique: La chimie de l'azote", June 3-6, 2013, St Florent (France).
- **Feautrier, N.** : "N. Tran Minh: Un chercheur engagé", Colloque Modélisation: Atomes, Molécules, Plasmas et Systèmes dynamiques, May 23-24, 2013, Bourges (France).
- **Minissale, M.**: "Diffusion and reactivity of Oxygen atoms » APiMI meeting, April 2013, Windsor (UK).
- **Dulieu, F.** : "Les molécules simples dans le MIS", Colloque EPOV, March 26, 2013, Paris (France).
- **Minissale, M.**: "Oxidation processes on cold surfaces, diffusion and reactivity", APiMI meeting, March 13, 2013, Leiden (The Netherlands).
- **Dulieu, F.**: "The Chemical Desorption" APiMI meeting, March 13, 2013, Leiden (The Netherlands).

- **Fillion, J.-H, Fayolle, E., Philippe, L., Michaut, X.,** Ôberg, K., Linnartz, H., **Bertin, M.**: "UV photodesorption of interstellar ice analogues: new highlights given by tunable synchrotron radiation", First Workshop on 'Experimental Laboratory Astrophysics, Poipu, Kauai, Hawaii (USA), Feb 25-27, 2013

2012

- **Dulieu, F.** "Mécanismes et synthèses à la surface des grains froids" PCMI, Nov. 2012, Paris (France).
- **Leach, S.** "Origins of Life", Seminar ISIS, Oct. 19, 2012, Strasbourg (France).
- **Fillion, J.-H., Michaut, X., Philippe, L., Romanzin, C., Jeseck, P., Doronin, M., Linnartz, H., Bertin, M.** "Photodissociation et photodésorption de H₂O, CH₃OH et CH₂OH dans les glaces" Workshop "processus physico-chimiques d'intérêt astrophysique : Chimie et excitation des hydrures", June 15-18, 2015, St Florent (France).
- **Congiu, E.** "NH₂OH formation via NO hydrogenation in dark clouds" Oct 5, 2012, Catania (Italy).
- **Dubernet, M.L.**, "New advances in Atomic and Molecular Data Infrastructure", ICAMDATA 2012 - Panel Session, October 2012, NIST, Gaithersburg (USA).
- **Janssen, C.** "Effet isotopique de l'ozone: observations, études, son rôle et ses applications", Journées Françaises de Spectrométrie de Masse 2012, Sept. 17 – 20, 2012, Orléans (France).
- **Dubernet, M.L., Doronin, M., Ba, Y.A.** and VAMDC Consortium, "Virtual Atomic and Molecular Data Center: Level 3 service and Future Prospects", IAU General Assembly, September 2012 Beijing (China).
- **Tchang-Brillet, W.-Ü L.**, Wyart, J.-F. "Present status of experimental data on VUV spectra of moderately charged tungsten ions from Meudon and Troitsk", IAEA Second Research Coordination Meeting on Spectroscopic and Collisional Data for Tungsten from 1 eV to 20 keV, Aug. 29-31, 2012, Heidelberg (Germany).
- **Leach, S.** "Origins of Life", The 240 Symposium : Science's Great Challenges, Aug. 13-15, 2012, Chicago (USA).
- **Minissale, M.** "Quantum tunneling diffusion of Oxygen atoms on cold surface" YAM, Nov. 05, 2012, London (UK).
- **Daudé, B., Janssen, C., Mahler, D. (2012)** "O₃ and styrene cross sections by photometry at 253.65 nm", PAMO-JSM 2012, Mini-colloque "Pollution Atmosphérique : Bilan et Prospectives, July 3-6, 2012, Metz (France).
- **Dubernet, M.L.**, "New advances in Atomic and Molecular Data Infrastructure", ASTR-GAIA Meeting, June 2012, Heidelberg (Germany).

2013: 'Wetland extent and dynamics from satellites: SMOS potential', C. Prigent, C. Jimenez, F. Aires, F. Papa. Workshop SMOS ESRIN.

2013: 'A new high-resolution passive microwave satellite for SST: the ESA STSE MICROWAT mission concept', C. Prigent, F. Aires, F. Bernardo, J.-C. Orlhac, J.-M. Goutoule, K. Atkinson, H. Roquet, C. Donlon, Living Planet Symposium, ESA, Edinbourg, UK.

2014: 'Wetland extent and dynamics from satellites', C. Prigent, F. Aires, F. Papa, conference ISSI, Bern.

2015: 'Transfert radiative aux interface', C. Prigent et S Jacquemoud, Workshop TRATORIA, CNES, Grenoble.

2016: 'Wetland CH₄ emission', C. Prigent et P. Bousquet, ESA workshop on greenhouse gases, Edinbourg, UK.

2017: 'A statistical retrieval of cloud parameters for the millimeter wave Ice Cloud Imager on board MetOp-SG', C. Prigent, D. Wang, F. Aires, C. Jimenez, EGU Vienne.

Séjours invités dans des laboratoires étrangers

HCERES

Haut conseil de l'évaluation de la recherche
et de l'enseignement supérieur

*Évaluation des unités de recherche
Novembre 2016*

2013-2017 : Séjours annuels de F. Aires (6 semaines) et C. Prigent (2 semaines) au Water Center, Columbia, New York (chercheurs associés à Columbia University)

2016 : Séjour invité de F. Aires et C. Prigent à l'Indian Institute of Science, Bangalore, Inde.