Physique et Chimie du Milieu Interstellaire

AstroRennes 2014

27-30 Octobre

Programme

lundi 27 octobre 2014

09h00-09h50 Accueil et inscription

09h50-10h00 A.Canosa Introduction Amphithéâtre A

Magnetic field in the ISM

10h00-10h25 K. Ferrière Magnetic field in the ISM: Observations (Planck, PILOT, LOFAR) and simulations
10h25-10h45 F. Levrier Polarized thermal dust emission from Planck
10h45-11h05 M. Alves The magnetic field structure in the Rosette nebula

Star formation

11h05-11h30 F.X. Désert (Sub-)mm wide-field observations at medium angular resolution: 30m + CCAT + APEX
11h30-11h50 A. Rivera The Role of Environment in the Formation and Evolution of ISM Filaments
11h50-12h10 P. André Probing the universality of interstellar filamentary structure: From Herschel to ArTéMiS and beyond

12h10-13h30 *Déjeuner - buffet sur place*

Observational constraints on dust modeling

13h30-13h50 D. Paradis Modeling and predicting the shape of the far-infrared/submillimeter emission in ultra-compact HII regions and cold clumps
13h50-14h10 L. Fanciullo Planck observations challenge existing dust models
14h10-14h30 C. Lefèvre Dust properties inside molecular clouds from coreshine modeling and observations
14h30-14h50 M. Koehler Self-consistent modelling of dust growth from the diffuse to dense ISM
14h50-15h20 Discussion 1: Scientific results from Herschel/Planck and analysis of open questions for the scientific community, chaired by **M. Gérin** (LERMA) and **I. Ristorcelli** (IRAP)

15h20-15h50 *Pause café*

Gas phase studies (1)

15h50-16h15 F. Lique State-to-state molecular collisions: progresses and prospects
16h15-16h35 Y. Scribano Quantum dynamics study of rate constant for a reactive collision of astrophysical interest : the $D^+ + H_2$ reaction
16h35-17h00 S. Le Picard Gas phase chemical kinetics: experimental advances and prospects
17h00-17h20 J.C. Loison The interstellar gas-phase chemistry of HCN and HNC
17h20-17h40 M. Fournier Measurement of rate constants for reactions of C_3N with small molecules using the CRESU technique
17h40-18h00 A. Bellili VUV spectroscopy and photophysics of interstellar and prebiotic molecules
18h00-18h20 X. Michaut Experimental investigations on nuclear spin-states equilibration of hydrogenated molecules at low temperature gas-solid interface

18h20-19h20 Visit of the CRESU experiments - Institut de Physique de Rennes - bât. 11C

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Gas phase studies (2)

09h00-09h20 K. Hickson CRESU studies of the reactivity of atomic nitrogen at low temperature

09h20-09h40 C. Sleiman Experimental and Theoretical Study between CN radical and Acetonitrile CH_3CN Relevant to Astrochemical Environments

09h40-10h00 L. Margulès Submillimeter-wave spectroscopy of nitrogen containing molecules of astrophysics interest

10h00-10h15 M.L. Dubernet The Virtual Atomic and Molecular Data Centre (VAMDC): Science Use Cases and the VAMDC Consortium

From protostars to protostellar disks and comets

10h15-10h35 B. Lefloch Exploring the Molecular Complexity of Protostellar Environments with ASAI

10h35-10h55 S. Maret Results of the CALYPSO survey of the youngest protostars: Chemistry, dynamics, and disk formation

10h55-11h25 *Pause café*

11h25-11h45 M. Gerin High resolution mapping of the B1b core : the interaction of two young protostars with their environment

11h45-12h10 V. Piétu (sub-)mm, high angular resolution observations of protoplanetary disks: PdBI/NOEMA & ALMA

12h10-12h35 D. Bockelée-Morvan Between ISM and protoplanetary disks: The molecular composition of comets (ROSETTA/PHILAE)

12h35-13h00 J. Tennyson Spectroscopy and chemistry of exoplanets

13h00-14h15 *Déjeuner - buffet sur place*

14h15-14h45 Discussion 2: Is there any limit for the molecular complexity in space? Multi-wavelength detection, and understanding the formation mechanisms, chaired by **Pierre Hily-Blant** (IPAG) and **L. Margulès** (PhLAM)

14h45-15h45 Sponsor presentations (Amphi A bât. 2)

15h45-17h15 *Pause café* + **Poster session 1**

Organisational aspects

17h15-17h40 E. Roueff The genesis of PCMI

17h40-17h50 J. Tennyson European Task Force for Laboratory Astrophysics (ETFLA)

17h50-18h00 F. Salama Laboratory Astrophysics Division of the American Astronomical Society (AAS/LAD)

18h00-19h00 Visit of the CRESU experiments - Institut de Physique de Rennes - bât. 11C

19h15-20h15 Conference grand public au Diapason :

«L'exploration de l'Univers, la révolution ALMA»

Maryvonne Gérin, Directrice du Laboratoire de Radioastronomie de l'École Normale Supérieure, Observatoire de Paris.

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Experiments on interstellar ices (1)

09h00-09h25 P. Theulé Chimie des glaces : formation des molécules complexes et photodésorption
09h25-09h45 P. Ghesquière Diffusion-limited reactivity in interstellar ice
09h45-10h05 J.B. Bossa UV laser desorption time-of-flight mass spectrometry of VUV photo-processed ices
10h05-10h25 M. Faure Hydrogen/deuterium exchanges in interstellar ice analogs
10h25-10h45 L. Krim Formation of hydroxylamine from ammonia and hydroxyl radicals. An astrochemically-relevant two-step mechanism

10h45-11h15 *Pause café*

Shock, PDRs, and HII regions

11h15-11h35 A. Gusdorf The environmental impact of irradiated shocks in the W28 A2 massive star forming region
11h35-12h00 A. Abergel The JWST project: Applications to PDRs or shocks
12h00-12h20 P. Pilleri High spatial resolution observations of key hydrocarbon species in the NGC 7023 PDR
12h20-12h40 O. Berné Dynamical properties of warm and dense photodissociation regions: from the interstellar medium to protoplanetary disks

12h40-13h50 *Déjeuner - buffet sur place*

13h50-14h10 P. Tremblin Impact of ionization compression on turbulent molecular clouds and dating of OB associations
14h10-14h30 P. Gratier Bright CO clumps resulting from the interaction of the HD34078 runaway star with the diffuse IC405 nebula
14h30-14h55 A. Decourchelle X-ray observations of supernova remnants and the future European X-ray observatory Athena
14h55-15h25 Discussion 3: Star formation yields, 3D structure of the ISM: The role of magnetic field, turbulence, stellar feedback and cosmic rays, chaired by **F. Boulanger** (IAS) and **B. Commercon** (CRAL)

15h25-16h20 *Pause café* + **Poster session 2**

H_2 formation and extragalactic ISM

16h20-16h45 J. LeBourlot Formation of H_2 in the Galaxy, sub-metallic galaxies, and the early Universe
16h45-17h05 E. Bron Dust temperature fluctuations and surface chemistry: H_2 formation
17h05-17h30 C. Bot What does the study of nearby galaxies teach us about the ISM processes?
17h30-17h50 A. Remy-Ruyer Probing the impact of metallicity on the dust properties in galaxies

18h30-19h30 Visit of Rennes center

19h30-23h00 Conference dinner at Lecoq Gadby

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Experiments on interstellar ices (2)

09h00-09h25 S. Morisset Formation of molecules at the gas-surface interface: experimental and theoretical advances

09h25-09h45 H. Chaabouni Water formation through O_2+D pathway on cold silicates and amorphous water surfaces of interstellar interest

Dust formation and lifecycle

09h45-10h10 M. Godard Hydrogenated Amorphous Carbons: evolution of interstellar carbon dust

10h10-10h35 F. Salama The formation of solid particles from their gas-phase molecular precursors in cosmic environments

10h35-10h55 M. Guélin Small scale structure of IRC+10216: a key to time dependent chemistry

10h55-11h25 *Pause café*

11h25-11h50 C. Joblin PAHs from circumstellar environments to the interstellar medium. The Nanocosmos project

11h50-12h20 Discussion 4: Nucleation, coagulation, clustering processes, photolysis, formation and desorption of ices. Impact on ISM and protoplanetary disks, chaired by **J.H. Fillion** (LERMA) and **K. Demyk** (IRAP)

12h20-13h30 *Déjeuner - buffet sur place*

ISM phases in and model of our Galaxy

13h30-13h55 V. Wakelam 3D interstellar chemo-physical Evolution (3DICE)

13h55-14h20 J. Black Visible and near-infrared spectroscopy of interstellar matter with ground-based instruments

14h20-14h40 F. LePetit The flux of cosmic rays and the physical conditions in the Central Molecular Zone of our Galaxy inferred by H_3^+

14h40-15h00 S. Vaupré Cosmic-ray induced ionization of a molecular cloud shocked by the W28 supernova remnant

15h00-15h20 P. Lesaffre Attempts at characterizing the structures of high dissipation in the interstellar medium

15h20-15h35 *Pause café*

15h35-16h00 L. Cambresy What do we learn from surveys (GAIA, PANSTARR, VISTA, etc) concerning the structure and phases of the ISM (3D ISM, extinction curve and diffuse bands studies)

16h00-16h25 F. Bournaud What is the status of the current models of our Galaxy?

16h25-16h40 Languignon SO5 - Plateforme MIS & Jets

16h40-17h10 Discussion 5: How to model the physics/chemistry of ISM (1D PDR, 1D shock, 3D MHD, 3D radiation transfer,...). Impact of the accuracy limitations and predictive capability of models? chaired by **F. Le Petit** (LERMA) and **P. Lesaffre** (LERMA).