

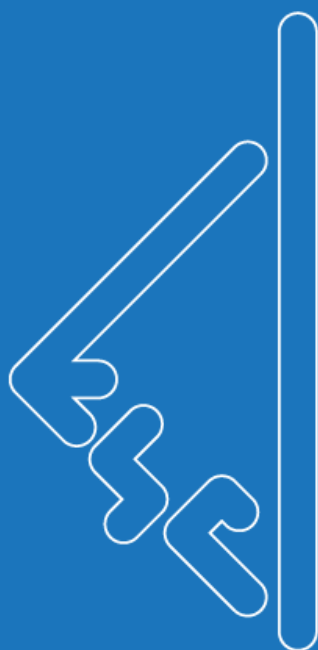
2019

04 Nov

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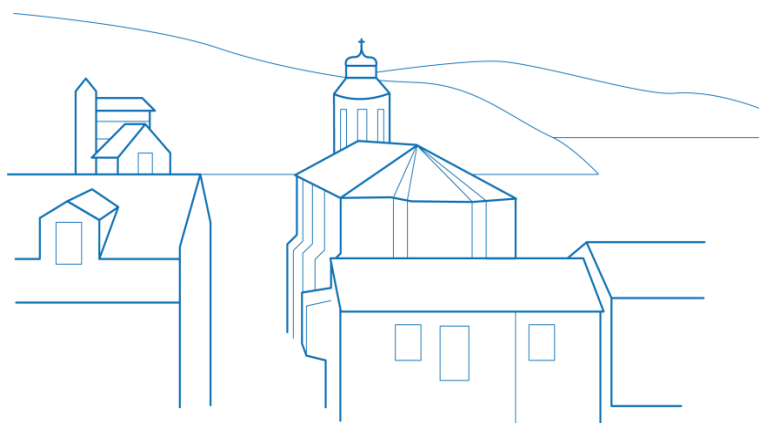
COSMIC TURBULENCE AND MAGNETIC FIELDS: PHYSICS OF BARYONIC MATTER ACROSS TIME AND SCALES

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QUASI-FINAL AGENDA

Keynote 40 min, Invited 30 min, Contributed 15 min, all including questions.

MONDAY November 4

8:45 Welcome - Boulanger & Falgarone

9:00 - Gas Physics, Star Formation and Galaxy Evolution - I

KN **Faucher-Giguere** – Challenges: Galaxy formation and evolution

IT **Fu** – Understanding Galaxy Evolution with Dusty Starburst Galaxies at High-Redshift

CT **Guillard** - Is accretion-driven turbulence a key process for galaxy growth?

10:25 Coffee

11:00 - Turbulence, Plasmas, Magnetic Fields and Cosmic Rays - I

KN **Pouquet** - Dissipation in MHD turbulence

CT **Grete** - Correlations and energy transfer in compressible isothermal and adiabatic MHD turbulence

IT **Zhdankin** - Intermittency of magnetohydrodynamic and kinetic turbulence

12:30 LUNCH

15:00 - Gas Physics, Star Formation and Galaxy Evolution - II

KN **Burkert** – Challenges: Star formation, now and then

IT **Meidt** - Molecular gas in the Milky Way and nearby galaxies

IT **Richter** – The many probes of the CGM (*video talk*)

Poster Flash Talks (10 min)

16:50 Coffee

17:15 - Gas Physics, Star Formation and Galaxy Evolution - III

IT **Genzel** - The evolution of the ionized gas velocity dispersion in SF galaxies

IT **Oh** – Turbulent Mixing Layers : cold gas, hot winds

CT **Semenov** - The role of ISM turbulence in regulation of star formation in galaxies

DISCUSSION 1 (30min)

The role of turbulence in galaxy evolution

Chairs : **Tacconi, Lehnert**

WELCOME DRINK

TUESDAY November 5

9:00 - Gas Physics, Star Formation and Galaxy Evolution - IV

KN **Bykov** - Challenges in The Hot and Relativistic Universe

IT **Lehnert** - Observations of the multiphase large scale environment of galaxies at high redshift

CT **Mohapatra** - Stratification and turbulence in the intracluster medium

10:25 Coffee and poster viewing

11:00 - Turbulence, Plasmas, Magnetic Fields and Cosmic Rays – II

IT **Alexandrova** - Solar wind turbulence

IT **Passot** - Energy dissipation in the Solar wind : theoretical challenges

IT **Matthaeus** - Who needs turbulence? Cascade, intermittency and Reynolds number in solar wind-like plasmas (*video talk*)

12:30 LUNCH

15:00 - Turbulence, Plasmas, Magnetic Fields and Cosmic Rays - III

KN **Subramanian** – Challenges: The Origin of cosmic magnetism

CT **Seta** - Magnetic fields in elliptical galaxies : a probe of fluctuation dynamo

IT **Bhattacharjee** – Magnetic reconnection (*video talk*)

16:25 Coffee

17:00 - Turbulence, Plasmas, Magnetic Fields and Cosmic Rays – IV

IT **Pfrommer** - Cosmic rays and magnetic fields in galaxies

CT **Tjus** - Plasma investigations of the connection between turbulence and cosmic ray transport in the ISM

CT **Vinogradov** - MMS observations of thin current sheets in the solar wind

CT **Saveliev** - A Stringent Limit on Primordial Magnetic Fields from the Cosmic Microwave Background Radiation

DISCUSSION 2:

Are turbulent cascades and dissipative processes adequately captured in numerical models?

Chairs : **Pouquet, Zhdankin, Falgarone**

WEDNESDAY November 6

9:00 - Gas Physics, Star Formation and Galaxy Evolution - V

IT **Miville-Deschênes** – The multi-phase ISM: observations (*video talk*)

CT **Bellomi** - 3D chemical structure of the turbulent diffuse interstellar medium

CT **Girichidis** - The chemistry and dynamics of the turbulent ISM including cosmic rays

10:00 Coffee

10:30 - Gas Physics, Star Formation and Galaxy Evolution - VI

IT **Zaroubi** - 21 cm Cosmology and the Epoch of Reionization

IT **Fialkov** - Hydro simulations of cosmic dawn

CT **Lewis** - Cosmic Dawn II : galactic photon budget and CGM

DISCUSSION 3:

Do we need non-linear physics to understand how the universe was re-ionized?

Chairs : **Zaroubi, Fialkov, Boulanger**

12:15 LUNCH

Free afternoon

Bus trip to Piana (or elsewhere, to be decided on Monday)

THURSDAY November 7

9:00 - Gas Physics, Star Formation and Galaxy Evolution – VII

IT **Godard** - Molecules and Turbulence: Following the energy trail

IT **Lesaffre** - Dissipation of compressible MHD turbulence

IT **Hily-Blant** - The small-scale structure of diffuse molecular ISM

10:30 Coffee

11:00 - Gas Physics, Star Formation and Galaxy Evolution - VIII

IT **Hennebelle** - Formation of structures in the turbulent magnetized ISM

IT **Kim** - Feedback regulated star formation

CT **Lehmann** – Self-irradiated molecular shock waves: probing turbulent cascades

CT **Mocz** - Pre-stellar core formation from dense shocked regions in supersonic isothermal magnetoturbulence

12:30 LUNCH

14:45 - Gas Physics, Star Formation and Galaxy Evolution - IX

IT **Lochhaas** - Multi-phase circumgalactic medium : fast winds, slow shells

IT **Appleton** - Large-scale turbulence in action in multi-phase intergalactic gas in pairs and groups of galaxies

CT **Lisenfeld** – Radio continuum emission in the bridges of collisional galaxy systems

IT **Bethermin** - Galaxy evolution at Cosmic Dawn (*video talk*)

16:30 Coffee

17:00 - Gas Physics, Star Formation and Galaxy Evolution - X

IT **Verhamme** - Lyman alpha emission around galaxies at high redshift

CT **Richings** - The effects of local stellar radiation on non-equilibrium ISM chemistry and ISM line diagnostics

IT **Noterdaeme** - Atomic and molecular hydrogen along quasar/GRB lines of sight

IT **Hopkins** - Cosmo-hydro simulations of galaxy formation **(TBC)** (*video talk*)

DISCUSSION 4:

Have numerical simulations a predictive power?

Chairs : **Klessen, Lesaffre, Appleton (TBC)**

CONFERENCE DINNER

FRIDAY November 8

9:00 - Turbulence, Plasmas, Magnetic Fields and Cosmic Rays - V

IT **Pety** – The Orion B project: from multi-line observations to GMC physics

CT **Brahimi** - Cosmic Rays and Interstellar medium turbulence dynamics

CT **Martin-Alvarez** - Tracing the origin and fate of magnetic fields in galaxies

IT **Dubois** - Dynamical effects of CR on ISM and galactic winds (*video talk*)

CT **Bennett** - Resolving shock heating, turbulence and the baryon cycle in high redshift massive galaxies

10:45 Coffee

11:15 - Statistical analysis and modelling of data

IT **Ensslin** - The turbulent Galaxy via information field theory

CT **Levrier**- The Reduced Wavelet Scattering Transform, a comprehensive statistical description of the non-Gaussian ISM

CT **Panopoulou** - Mapping the magnetic field of the diffuse ISM in 3D

CT **Beattie** - Reconstructing the three-dimensional density distribution of observed, strongly-magnetised, turbulent molecular clouds

CT **Durrive** - An analytical stochastic representation of 3D MHD turbulence

12:45 LUNCH

14:30 DISCUSSION 5 :

How will future observations challenge us?

Chairs : **Pety, Ensslin**

15:00 - CLOSING LECTURE

Boulanger & Falgarone : What have we learned (during the meeting)?

15:30 END OF THE MEETING
