

Astroparticle physics session

Astroparticle physics: several meanings depending on communities (e.g. CNRS sections 01, 02, 17)

- * **Astrophysical phenomena or processes in which elementary particles (standard or exotic) play a central role**
- * **Astrophysical phenomena or processes that can be traced by observing induced cosmic radiation or particles**

=> **high-energy astrophysics:** violent/high-energy/non-thermal phenomena (cosmic-ray sources + pheno)

=> **extreme astrophysical environments:** e.g. dense/magnetized matter, environments, shocks, vicinity of BHs, etc.

=> **new physics:** new particles/interactions in astro environments, new particles/objects (DM, PBHs, sterile neutrinos, axions, etc.).

=> **Multi-toolkit:** field theory, non-linear physics, dynamics of complex systems, etc.

=> **Multi-energy-scale, multi-length-scale, multi-mass-scale**

=> **Multi-messenger astronomy, multi-probe:** photons, neutrinos, cosmic rays, gravitational waves

Often at the frontiers of Astrophysics, Particle Physics, Cosmology, but not only: e.g. Plasma Physics, Nuclear Physics, Gravitation, etc.

Program:

** **Review talks** (try to collect broad picture in France vs. international): meant to reflect **diversity**+strengths in place

** **Discussion session:**

+ **A short highlight talk: Cristina Volpe – Neutrinos in/from SNe** – as illustrative of pluri-disciplinary techniques

+ **Open discussion** (preparing the general discussion of Tuesday):

→ Asmaa Abada and David Maurin open the discussion

→ priorities, what is missing for theory dev., computing aspects, links to experimentalists/observers, etc.

++ **Use the chat box to ask questions/make suggestions!**