

2021



OF GALAXIES

ROUND TABLE

Inventory of the ISM properties
across galaxies

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SCIENCE QUESTIONS

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Bridging local and distant Universe

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Bridging local and distant Universe

- Can we better understand the distant Universe with local studies? Can you give concrete examples? What is missing to bridge both (*e.g.* which observations)?
- And, reversely, can we better understand the local Universe with distant studies?
- Stellar physics is historically more advanced than ISMism. Noticing the analogy between the Solar-vs-stellar studies and Galactic-vs-extragalactic studies, could we expect particular progress in ISMology?

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- What are the ISM invariants (*i.e.* the common properties) across galaxies and redshifts?
- Should we talk about "the interstellar medium", as something unique, or should we talk about "interstellar media"?
- Should we include the CGM, whose interaction with the ISM is very important at high- z , in a single ISM/CGM system?

METHODOLOGY QUESTIONS

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Confusion limit

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- With the increasing sensitivity of detectors, measuring the emission of something as diffuse as the ISM is becoming more and more challenging, because of the confusion along the sightline. In terms of surface brightness, the Galactic ISM and that of nearby galaxies are similar, at a given column density. Do you think we are going to reach a wall in our understanding of the ISM, because of that?

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- What will be the potential of machine learning techniques to decompose the different layers of information? Is there an issue with resolved star formation, which are dense regions, but very crowded?

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- The same thing happened with UV astronomy, after FUSE. Can the possibility of a mission such as LUVOIR lead to new discovery in ISM studies?

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- Thanks to their wealth of data and spatial resolution, local systems can be modeled quite accurately. The same models are also applied to distant galaxies. They however need to be simplified, because of the lack of observational constraints and the poor spatial resolution. What do you think are the consequences of typical model simplifications adopted in the distant Universe (spherical symmetry, homogeneous medium, Galactic dust properties, stacking sources, *etc.*)? What could we do to improve on these?

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- More generally, do average properties (temperature, density, *etc.*) have any physical meaning?

META-ASTROPHYSICS

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- Are there analogies to explore, that could be interesting for ISMism?

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- According to you, which field related to the ISM of galaxies will become big, in the near future?
- What would you want to work on, if you were in your twenties, again?

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Your dream mission/observatory

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- If ESA/ESO offered you an unlimited budget (*i.e.* you could realize anything technologically feasible) to launch a mission or build a telescope, what would you choose?
- Is the necessary consensual approach needed to build a space mission or an observatory preventing real breakthroughs, by limiting original approaches?