



## **THE ISM OF THE FIRST GALAXIES : A THEORETICAL PERSPECTIVE**

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Tuesday, July 13, 2021, 13:30–15:15 (CEST)

Understanding the ISM of the first galaxies is a key step to build a coherent galaxy formation and evolution scenario, and to interpret their observed properties. This is crucial in an era in which ALMA and JWST are/will provide exquisite data of the faintest objects at high spectral and spatial resolution. The physical conditions prevailing in the first cosmic Gyr were dramatically different with respect to present-day ones. This profoundly affects the internal structure and dynamics of early galaxies and of their interstellar component. The Lecture will start from a general review of the properties of high- $z$  galaxies descending from the concordance cosmological model, to then assess their implications for the ISM thermodynamics, energetics and composition. These basic physical descriptions will be confronted with available phenomenology to identify critical areas, and define a set of pillars that are fundamental to understand and produce the most advanced research in the field.

### Useful references related to the lecture :

- Spitzer, Physical Processes in the Interstellar Medium (book)
- Osterbrok, Astrophysics of Gaseous Nebulae and AGN (Book)
- Ostriker & McKee, 1988, *Rev. Mod. Phys.* **60**, 1
- Dayal & Ferrara, 2018, *Phys. Rep.*, **780**, 1