



# **Extragalactic Astrochemistry: from nearby to high redshift galaxies**

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**Monday, July 28, 2025, 08:30–10:15**

Molecules pervade the cooler, denser parts of our Universe, in particular the reservoirs of the matter that forms stars and planets, and the gas in the centres of galaxies. In fact, observations across the Universe reveal a surprisingly large number of molecules and show how complex chemistry in space can become, despite the harsh environment of the interstellar medium. Molecules not only play a key role in the formation and the shaping of galaxies, but they are also great tools to trace of their physical characteristics. In this Lecture I will provide an overview of Astrochemistry within the context of the formation and evolution of galaxies. I will show how molecular emission can be used to explore and characterize the physical conditions and energetics, as well as, possibly, the evolutionary status of the interstellar medium. Finally, through an observational and theoretical tour of recent advances in the field, I will show how to make molecules into one of the most powerful diagnostics of the formation and evolution of stars and galaxies.