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Complessità chimica all'alba della formazione planetaria nell'era di SKAO

Wednesday 4 June 2025 18:10 (20 minutes)

"Over 300 molecules have been identified in the interstellar medium (ISM), including complex species thought to be precursors of prebiotic chemistry. A remarkable molecular diversity is already present in the earliest stages of star formation, shaping the initial chemical inventory inherited by planetary systems. Most of our current knowledge comes from observations at millimeter wavelengths, where relatively light molecules, such as interstellar complex organic molecules (iCOMs) and small carbon chains (e.g., HC_3N, c-C_3H_2), emit most strongly. In contrast, radio wavelengths are uniquely suited to probing heavier and more complex carbon-bearing species (e.g., C_4H, C_6H, HC_7N, HC_9N, C_3S), which may play a crucial role in the transfer of organic material to the newly formed planetary system.
I will present preliminary results from single-dish telescopes (GBT and Yebes 40m) and discuss future prospects with next-generation radio interferometers, such as SKAO and ngVLA, to map the spatial distribution of complex carbon species. In this context, I will also highlight the ongoing work of the SKAO ""Cradle of Life"" Science Working Group."

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Session Classification: Astronomia radio: verso SKAO e ngVLA (chair: F. Govoni)