Contribution ID: **19** Type: **not specified**

Unveiling the earliest stages of massive star formation through interferometric radio observations

Tuesday 3 February 2026 16:25 (25 minutes)

The formation of stars with masses greater than 8 times the mass of the Sun still remains unclear. Recently born massive stars are deeply embedded in the most crowded and densest regions of the interstellar medium of galaxies; thus, they are highly obscured to optical and even infrared wavelengths. Therefore, interferometric radio observations are crucial to shedding light on the formation mechanism of massive stars. In this talk I will summarize the results of the analysis of the radio emission from massive star-forming regions observed with high angular resolution, aiming to probe the closest vicinity of massive stars at their earliest stages (i.e., down to Solar System scales). At these scales, essential elements associated with the evolution of protostars like putative disks, companions, ionized inflows or jets can be explored. I will focus on the emblematic example IRAS 18162-2048: an extremely young 20 Msun star that powers the longest and fastest protostellar radio jet known in our Galaxy. We conducted a multi-epoch study of the radio emission originating at the heart of this jet inferring processes that might occur at a few tens of AU, making this IRAS 18162-2048 one of the best case studies on the mechanism of mass growth in massive stars during their earliest stages.

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