

IAA Severo Ochoa Meeting: Addressing Key Astrophysical Questions from Granada

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“Star formation radio news: the impact of wideband capabilities”

Radio interferometry is currently experiencing significant progress, starting with the VLA and VLBA upgrades and the availability of ALMA - and continuing with SKA/ngVLA precursor experiments as well as other newly upgraded facilities. One main area of progress is due to the availability of wideband radio receivers, which have led to greatly increased continuum sensitivity and often simultaneous coverage of spectral lines. In this talk, I will highlight two aspects of how this technological progress has impacted star formation science. First looking at nearby star formation, I will present how the upgraded VLA and VLBA have transformed our view of the Orion Nebula Cluster, the most nearby region of high-mass star formation. For the first time, we now have information on the radio emission mechanisms and even time domain data for a large sample of young stellar objects, providing new constraints on the high-energy irradiation of their environments and its impact on planets and planet formation. Then switching gears to nearby galaxies, I will present first results of our ongoing SMA Andromeda Dust And Molecular gas Survey (SMA ADAMS), utilizing the wideband upgrade of the Submillimeter Array. For the first time, the resulting sensitivity allows us to detect dust continuum emission from resolved individual Giant Molecular Clouds in the Andromeda Galaxy, together with their molecular emission - a key to bridging the gap between Galactic and extragalactic star formation science.



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