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Giovanni Gandolfi - At the frontiers of cosmic history: How ALMA and JWST Team Up to Confirm High-Redshift Galaxy Candidates

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JWST's ability to observe in the infrared range has pushed the limit of galaxy redshift to greater than 10. The first data release has led to the discovery of over a hundred candidate galaxies at $z > 11$. Some of these candidates have been identified as being heavily extinguished and feature mature stellar populations; whereas other candidates, dubbed "blue monsters", are bright and dust-free objects characterized by blue UV slopes, challenging the current theoretical models. However, some of these candidates may also be low-redshift contaminants, making it crucial to confirm their nature. After a state-of-the-art review of these JWST high-redshift galaxies candidates, I will showcase how multi-band ALMA follow-up observations can provide essential insights into the nature, physical properties, and redshift of such objects. ALMA, with its precise measurements, high resolution, and sensitivity, operating at millimetre and submillimeter wavelengths, is an essential instrument for confirming the redshift and physical properties of these JWST high- z galaxy candidates. Ultimately, I will show how the synergy between ALMA and JWST has the potential to lead to groundbreaking discoveries on the early Universe.

Session Classification: Cosmology, high- z Universe, galaxy clusters