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Dipartimento di Fisica e Astronomia Galileo Galilei

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AULA ROSTAGNI
YOUTUBE STREAMING

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From Nearby Dusty Cradles to Distant Dawn: A tale of star clusters in evolving galaxies

Abstract: Star clusters are key building blocks of galaxies from the earliest cosmic times. In local galaxies, JWST is peering through the dust revealing the hidden populations of emerging star clusters caught in the act of rapidly destroying their natal giant molecular clouds. Using the 3.3 micron polycyclic aromatic hydrocarbons bands and Paschen alpha emission as tracers of the embedded phases we find shorter emergence timescales for increasing star cluster mass. These results have fundamental implications for simulations of star formation, the ability to enable the escape of ionizing radiation, timescales available for planet formation.
At high redshift, JWST combined with gravitational lensing resolves early galaxies down to 10s of parsec. I will present the main physical properties of stellar clumps and star clusters in galaxies between redshift 12 and 1. Star clusters stand out as gravitationally bound systems; they are very dense and dominate the luminosity and mass of their host galaxies making them incredible furnaces for the formation of very massive stars and intermediate mass stellar black holes via runaway stellar collisions.

Angela Adamo obtained her Master's degree in Astronomy from the University of Padua in 2005. She subsequently moved to Stockholm University (Sweden), where she earned her PhD in 2011. Following her doctorate, she held an independent postdoctoral fellowship at the Max Planck Institute for Astronomy in Heidelberg, Germany, and later became an independent group leader at Stockholm University. Since 2019 she has held a tenure-track position and, in 2022, was promoted to Associate Professor. She currently serves as Director of Studies for the Bachelor's and Master's programmes in Astronomy at Stockholm University. Dr. Adamo has secured several competitive research grants and has led multiple research projects based on hundreds of hours of awarded observing time. Her research focuses on star formation and star cluster populations in both the local and high-redshift Universe.

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