

# Exploring the Role of Star-forming Environment on the Formation of Stellar Multiples

*Tuesday 26 August 2025 15:10 (20 minutes)*

Multiplicity is a common outcome of the star formation process. Previous stellar multiplicity studies in young, star-forming regions have identified a trend in wide (100 - 10,000 au) companion frequency with stellar density where higher frequencies are found in lower density regions, but it is unclear if this is primordial due to star formation physics or from dynamical interactions. Companions at separations  $< 100$  au are likely to survive to reach the Galactic field and are important tracers of their birth environment. Using Gaia pre-selection, we performed large multiplicity surveys in Orion OB1a and OB1b (10 and 5 Myr, respectively) with Gemini speckle interferometry and Keck/NIRC2 imaging and aperture-masking interferometry down to 10 au. With the Hubble Space Telescope Advanced Camera for Surveys, we characterized the companion population in NGC 1333 (1-3 Myr) by fitting empirical point-spread function models to Hubble Space Telescope ACS data. We present our results which allow us to explore the origin of the Galactic field population and the role of environment on the formation of stellar multiples.

**Presenter:** Dr DE FURIO, Matthew (University of Texas at Austin)

**Session Classification:** Formation pathways