

# Unveiling the initial stages of star formation with Gaia-NIR

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Investigating the physical mechanisms leading to the formation of stars is fundamental for understanding the evolution of galaxies and the origin of the solar system. The Gaia Space mission with the support of ground-based spectroscopic surveys started a revolution in this field thanks to the discovery of sparse young stellar populations and because allowed us to investigate the structure and kinematics of young star clusters. However, such studies focus on stars that are visible in the optical band and, therefore, have already completed the initial stages of the star formation process when they are embedded in molecular clouds. Gaia-NIR will allow us to investigate the dynamics of young stellar systems in these very early stages, probing the initial conditions of star formation. In this talk I will outline the open issues that can be addressed with Gaia-NIR in this field and discuss the scientific motivation for equipping the satellite with a Radial Velocity Spectrometer and/or developing new ground-based instruments for ground based follow up.

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