Contribution ID: **8**   Type: **not specified**

Kinematic studies of stellar systems with HRMOS

Monday, 18 October 2021 12:50 (15 minutes)

Star clusters and dwarf galaxies are powerful astrophysical laboratories to address several open issues in modern astronomy, ranging from stellar evolution to cosmology. Stellar kinematics is a unique tool in this context. In particular, precise and accurate stellar velocities allow us to measure the mass of a stellar system (including its dark components and their spatial distribution), to determine membership of stars, to detect and characterise binaries, to explore the individual dynamics of different populations within a system, and to study the connection between its present properties and past evolution. Kinematic studies of nearby stellar systems have been recently boosted by astrometric data from the Gaia space mission and radial velocities from multi-object spectrographs (MOSs). However, the precision of the current and next generation of MOSs is limited to 300-500 m/s and Gaia can measure tangential velocities with errors below ~100 m/s only within a 1-2 kpc. HRMOS will allow us to perform kinematic studies with a precision of ~10 m/s in objects located at larger distances.
In this talk, we will show how HRMOS can improve our understanding of the properties and the origin of star clusters and dwarf galaxies discussing a few specific science cases.

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contributed talk

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Session Classification: Day 1