Séminaire organisé par

AIM &Le service d'Astrophysique
CEA/DSM/Irfu

MULTIPLE STELLAR POPULATIONS IN GLOBULAR AND MASSIVE STAR CLUSTERS: FORMATION, EVOLUTION, DYNAMICS

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A major paradigm shift has recently revolutionized our picture of globular clusters (GC) that were long thought to be simple systems of coeval stars born out of homogeneous material. Indeed, detailed abundance studies of GC long-lived low-mass stars performed with 8-10m class telescopes, together with high-precision photometry of Galactic GCs obtained with HST, have brought compelling clues on the presence of multiple stellar populations in individual GCs. These stellar subgroups can be recognized thanks to their different chemical properties (more precisely by abundance differences in light elements from carbon to aluminium) and by the appearance of multimodal sequences in the colour-magnitude diagrams.

This has a severe impact on our understanding of the formation and early evolution of GCs, and more generally of the role that massive stars may play in shaping the intra-cluster medium and in inducing secondary star formation in massive star clusters.
In this talk I will summarize the observational status and present the detailed timeline we have recently proposed for the first 40 Myrs in the lifetime of a typical massive protocluster following the general ideas of our so-called "Fast Rotating Massive stars scenario" and taking into account the dynamics of interstellar bubbles produced by stellar winds and supernovae. I will also discuss various implications of this new paradigm on the determination of the fraction of Galactic halo stars that may have originated in massive star clusters, as well as on the estimate of the contribution of GCs to cosmic reionisation.

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11h00 Salle Galilée bât 713 C - Orme des Merisiers

Un café sera servi 15 mn avant le séminaire

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