

The young supermassive star clusters: an opportunity to study stars and planets formation in starburst

Wednesday, 17 January 2024 12:00 (20 minutes)

With a mass exceeding several 10000 solar masses, the young supermassive star clusters known in the Milky Way today represent the most accessible examples of starburst regions. These regions represent the most extreme star-forming environments, characterized by intense fields of UV and X-ray radiation, and relativistic particles, produced by the compact and rich populations of massive stars in these clusters. Since this energetic radiation impacts every aspect of the star and planet formation process, stars and planets form differently in such massive star-forming environments compared to low-mass ones. Additionally, supermassive star clusters are common in galaxies experiencing intense epochs of star formation, such as interacting galaxies or in the early Universe. Even in the Milky Way, during major merging events, star formation typically occurred in supermassive star-forming environments. For these reasons, despite their low number, large distances from the Sun, and large extinction, the Galactic supermassive star clusters are important targets to understand star and planet formation in the most extreme star-forming conditions. In this presentation, I will discuss recent progress in the analysis of supermassive star clusters and explore the profound improvements that GaiaNIR would bring to this field.

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