

Colloquium

SFB 956

Conditions and Impact of Star Formation

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Max-Planck-Institut für Radioastronomie

Auditorium 0.02

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The Dance of Stars in Galactic Nuclei

Super-massive black holes (SMBHs) give us a unique opportunity to study astrophysical processes under extreme conditions. The innermost parsecs around an SMBH should be a hostile environment for star formation. Molecular clouds are expected to be disrupted by the SMBH's tidal shear before they approach the central parsec. Thus, stars cannot form in 'normal conditions', even if the SMBH is quiescent. Despite this, we DO observe young ($\ll 100$ Myr) stars in the central parsec of our Galaxy. Furthermore, several observations suggest recent episodes of star formation in nearby galactic nuclei. Modelling the formation and the dynamical evolution of such young stars is an essential step to understand the interplay between an SMBH and its environment. In this talk, I will discuss the most recent scenarios proposed to explain the formation of stars close to SMBHs. I will show that the orbital evolution of the young stars can be used to probe the distribution of gas in the innermost parsecs of a galaxy. Finally, I will speculate on the chance of observing planets bound to SMBHs.