

**Manuel Arca Sedda**  
(Astronomisches Rechen Institute, ZAH - Heidelberg Univ.)

**Title: Intermediate-mass ratio inspirals in galactic nuclei**

**Abstract:** The growing evidence of intermediate-mass black holes (IMBH) candidates lurking within the inner 10 pc of the Milky Way centre, and the observation of putative IMBHs in extragalactic massive star clusters orbiting the close vicinity of their host galaxy, pose the question of how such objects would interact with the central supermassive black hole (SMBH) harboured in the host galaxy centre. In this talk, we will discuss the possible formation of multiple systems comprised of an SMBH and up to eight IMBHs. Using direct N-body models tailored either to the Milky Way or to a massive elliptical galaxy, we show that the probability for IMBH-SMBH coalescence to occur is not negligible. In the Galactic Centre, such an event could have occurred in the past few Gyr. In massive ellipticals, mergers of this kind have the potential to be observed by LISA even for SMBH masses above  $10^8 M_{\text{sun}}$ , thus making this channel a unique probe to observe such massive SMBH in low-frequency gravitational wave detectors.