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Binary Evolution in Galactic Nuclei

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Deadline for manuscript submissions:
closed (1 May 2022)

Message from the Guest Editors

Galactic nuclei and the supermassive black holes (SMBHs) that they often contain have received much attention in the last decade, especially with the recent detection of gravitational waves (GWs) from mergers of stellar-mass BHs. One particularly interesting consideration is that an SMBH can secularly perturb and accelerate the merger of stellar-mass BH binaries orbiting around it through the (eccentric) von Zeipel-Lidov-Kozai mechanism. Although the latter mechanism has been studied in the literature before, many complications have been often ignored, including interactions of the binary with other stars in the galactic nucleus, and pre-compact object stellar and binary evolution.

The goal of this Special Issue is to consolidate recent advances in the field of binary dynamics and evolution. Issue topics include, but are not limited to:

1. gravitational dynamics of binaries near SMBHs
2. perturbations from other stars and compact objects (including fly-bys, correlated encounters, and non-spherically-symmetric potentials)
3. the impact of stellar evolution
4. GW signals from binaries near SMBHs
5. other implications of binary mergers such as supernovae and blue straggler formation

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Message from the Editor-in-Chief

The multidisciplinary *Universe* journal is aiming to follow and, hopefully, to lead to the largest extent as possible the ever-self renovating threads which weave mathematical theories with our understanding of the magnificent natural world. On behalf of all the distinguished members of the editorial board, I extend my welcome to this new journal and look forward to hearing from the interested contributors and learning about their valuable research.

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