

Astrometric lensing signatures of IMBHs with the Gaia space mission

Intermediate mass black holes represent the apparent mass gap (10-10000 solar masses) between the well known populations of black holes: stellar-mass and supermassive black holes. They are thought to be the 'seeds' from which SMBHs grow, necessary to explain why there are SMBHs observed in the early Universe. There could be primordial black holes in the IMBH range; although observational constraints exclude sufficient representation of PBHs to contribute significantly to dark matter in most mass ranges, the main ones still considered are the asteroid-like and the IMBH mass range. However, despite their importance, IMBHs are still an obscure class of objects with only a handful of candidates.

We are proposing to search for dark matter in the form of IMBHs. For this purpose, we plan to look for lensing events caused by black holes from the mass range of 100-10000 solar masses. These events could be observed in the upcoming Gaia data as astrometric lensing, and some of them could be resolved. With this approach, new IMBH candidates could be discovered and their properties measured. I will show simulations of potential events and discuss plans for the future of this project.

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