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Schwarzschild Modelling of the barred galaxy NGC 3783

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The Schwarzschild orbit-superposition method, developed for modeling galaxy dynamics, uses a combination of stellar orbits to represent the gravitational potential of a galaxy's center. This technique enables us to estimate the mass of the supermassive black hole (SMBH) residing in the galactic nucleus. Measuring the SMBH mass is crucial for understanding the growth and evolution of supermassive black holes and their role in galaxy formation. In this part of my thesis, I am working on using integral field unit (IFU) kinematics to construct a Schwarzschild model of NGC 3783's center and estimate the mass of its SMBH. NGC 3783 is a barred spiral galaxy, and the presence of this bar structure complicates the morphology and kinematics. Excluding bar structures from dynamical models can lead to biased SMBH mass estimates, and so we must adjust the Schwarzschild method to account for the bar, for which I will use the AGAMA: action-based galaxy modelling architecture developed by E. Vasiliev. This work is currently in progress.

Field of study

Astrophysics

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Session Classification: Poster session: Enjoy the posters!