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Dynamics of Spheroids and SMBHs

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By now more than hundred massive black hole (MBH) mass measurements of local galaxies based on stellar or gaseous motion reveal strong correlations of the MBH mass with their bulge properties, such as bulge mass, stellar velocity dispersion (σ) and light concentration. Determining MBH masses is a challenging procedure and it is not possible to use one single method across the full sample of galaxies. Problematically, measurements from different dynamical tracers often give discrepant results, rising the question whether the variety of methods forces an additional bias on the scaling relations. Therefore, connecting mass results from different methods is necessary to evaluate the robustness and universality of the measurement results and thus crucial for improving the understanding of the interplay between the central black holes and their host galaxies. In my review I will address the following questions: Do high-mass and low-mass black holes follow the same scaling relations? Does the variety of mass measurement methods force an additional bias on the scaling relations? And how can we deal with selection biases?

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