Mass Distribution of Galaxies

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Abstract

Knowing the mass distribution of galaxies is essential in understanding their structure and evolution. We can infer the total (including dark) matter distribution of a galaxy by constructing dynamical models that fit the observed motions of its stars and/or gas. Here, we focus on measuring the mass distribution of a sample of 18 spiral galaxies, using two-dimensional stellar kinematics obtained with the integral-field spectrograph SAURON. We decompose these galaxies into bulge and disk components and fit the observed second order velocity moments with solutions of the axisymmetric Jeans equations. Good fits are already obtained especially for the Sb/c spirals, but to improve the inferred mass distribution we are extending the models, including dynamical bulge-disk decompositions, as well as investigating more general (orbit-based) dynamical models.