Galaxy evolution in clusters

Clusters of galaxies are important laboratories for the study of the physical processes that drive galaxy evolution. It is likely that the characteristics of the cluster environment (high galaxy density and the presence of a hot diffuse gas component) play a fundamental role in shaping the properties of cluster galaxies, which markedly differ from those of field galaxies. My main research lines in this field are:

1. the determination of the relative (spatial and velocity) distributions of different cluster galaxy populations and of their **orbits** within the cluster;
2. the study of the luminosity and stellar mass functions of different cluster galaxy populations as a function of the galaxy position in the cluster.

These analyses are based on data for clusters at different redshifts, such as WINGS, FOGO, CLASH-VLT, GOGREEN.
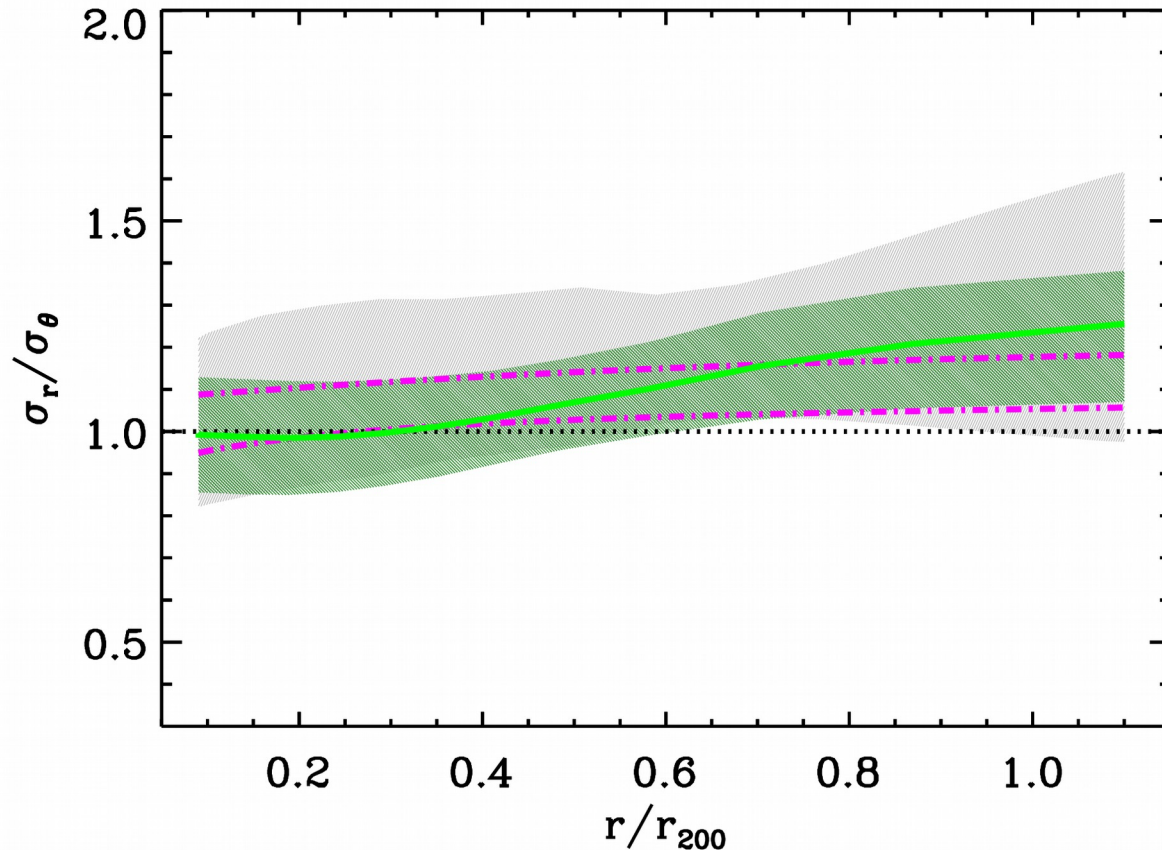

Figure: The velocity anisotropy profiles of an ensemble cluster at mean redshift 1.1 from the GOGREEN survey (green curve and shading, indicating the 1-σ confidence region) obtained from the Jeans inversion technique (Solanes & Salvador-Solé 1990) and compared with the solution from MAMPOSSt (magenta lines; Mamon, Biviano & Boué 2013) and with the result obtained by Biviano et al. (2016) on the GCLASS cluster sample (grey shading). From Biviano et al. (2021).