

Testing tension with GR using the mass profiles of galaxy clusters

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Galaxy clusters are excellent natural laboratories at the edge between astrophysics and cosmology, at those scales where possible departures from General Relativity (GR) can leave a detectable imprint. Moreover, clusters allow for jointly constraining both the relativistic and non-relativistic sectors of the gravitational interaction, through lensing and internal kinematics (of gas or member galaxies) respectively, giving interesting hints on the behaviour of gravity at large scales. I will discuss the recent results obtained applying the license-free code MG-MAMPOSSt to kinematic and lensing data of galaxy clusters analysed within the CLASH/CLASH-VLT collaborations, for two general classes of viable modified gravity/dark energy models. I will show how the combination of lensing and kinematic analyses can break the degeneracy in the parameter space, I will discuss possible sources of systematics and future improvements of this method in view of next generation imaging and spectroscopic surveys.

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