

Galaxy clusters in presence of dark energy

Dark energy, discovered by observations of the SN Ia at redshift $z < 1$, affects the large scale stellar structures in the Universe, like the galaxy clusters. Being the observed velocities of the galaxies inside a cluster largely smaller than the light velocity, we can derive, and numerically solve, the gravitational equilibrium equation in presence of dark energy by considering the Newtonian regime. In the Λ CDM model, dark energy is identified by the Einstein Λ term with a constant energy density. The presence of dark energy in the gravitational equilibrium equation leads to wide regions in the gravity versus dark energy density diagram where the equilibrium solutions are not allowed, due to the prevalence of dark energy effects on the gravity. The improvement of the numerical calculations will allow us to compare the observational data of the galaxy clusters, present in the most important catalogues, with our theoretical model.