

The luminosity distance - redshift relation in Cosmologies beyond FLRW

Dimitar Ivanov
Astroparticle Physics
International School for Advanced Studies (SISSA)
Italy

Observations from standard candles (such as type Ia supernovae) are usually fitted with a theoretical $d_L(z)$ relation based on simple FLRW cosmology. If one considers departures from such a cosmology, for example due to cosmic structure inhomogeneities or in models beyond the Λ CDM, one needs an improved formula for the luminosity distance. I will show how such a formula can be derived in Conformally FLRW and linearly perturbed FLRW cosmologies. The derivation is based on two different but related approaches - one using the Jacobi map and another using the van Vleck determinant. I will finish by commenting on the application of this formalism to the analysis of present and future data.