

Multipole Expansion of the Local Expansion Rate

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The lack of convergence to a consensus value for the Hubble constant has triggered a search for the reliability of non-standard cosmological line elements. The question is whether metrics with a lower degree of symmetry than FRW, while remaining simple, provide a reliable description of the data in the local part of the universe where the global uniformity is violated. We address this problem by determining the multipole structure of the redshift-distance relation in the local universe. Unexpected symmetries appear, whether the spherical harmonic analysis of the local expansion rate field is performed on galaxy or SNIa samples. Implications for the determination of the Ω_0 parameter will be discussed and a proposal for a non-standard metric that accurately describes the local data will be suggested.

Auteur principal: MARINONI, Christian (Centre de Physique Théorique)

Orateur: MARINONI, Christian (Centre de Physique Théorique)