Contribution ID: **77** Type: **Talk**

Relativistic effects and primordial non-Gaussianity in the matter density fluctuation

Saturday, 5 December 2015 14:21 (21 minutes)

We present the third-order analytic solution of the matter density fluctuation in the proper-time hypersurface of nonrelativistic matter flows by solving the nonlinear general relativistic equations. The proper-time hypersurface provides a coordinate system that a local observer can set up without knowledge beyond its neighborhood, along with physical connections to the local Newtonian descriptions in the relativistic context. The initial condition of our analytic solution is set up by the curvature perturbation in the comoving gauge, clarifying its impact on the nonlinear evolution. We compute the effective non-Gaussian parameters due to the nonlinearity in the relativistic equations. With proper coordinate rescaling, we show that gravity respects the equivalence principle the equivalence principle is respected and the relativistic effect vanishes in the large-scale limit.

Primary author: YOO, Jaiyul (University of Zurich)

Presenter: YOO, Jaiyul (University of Zurich)

Session Classification: 07 - Large scale structures