**Locally inhomogeneous cosmology as a possible explanation of dark energy**[1] XINGHAI ZHAO, GRANT MATHEWS, IN-SAENG SUH, University of Notre Dame, JAMES WILSON, LLNL — One possible explanation for the origin of the dark energy which contributes the apparent cosmic acceleration involves general relativistic corrections to the Friedmann expansion for a locally inhomogeneous cosmology. The general solution of this scenario has not been established except for cases with special symmetry like the Lemaitre-Tolman-Bondi model. In this talk, I will discuss a numerical simulation approach in which we have derived a scheme to include general relativistic corrections for general 3D inhomogeneities to the Newtonian large scale structure code GADGET-2. In particular, the supernovae magnitude-redshift relation will be examined with this approach as a way to account for the apparent cosmic acceleration. Future improvements of the code and proposed observation tests of this hypothesis will also be discussed.

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