Contribution ID : **143** Type : **Talk in parallel session**

Screening vs. gevolution: in chase of a perfect cosmological simulation code

Wednesday, 1 September 2021 17:10 (15)

We compare two competing relativistic approaches to the N-body simulation of the Universe large-scale structure. To this end, employing the corresponding alternative computer codes ("gevolution" and "screening"), we conduct a series of cosmological simulations in boxes of different sizes and calculate the power spectra of the scalar perturbation Φ, the frame-dragging vector potential $\mathbf{B}$ and the difference between scalar modes $\chi=\Phi-\Psi$. We demonstrate that the corresponding power spectra are in very good agreement between the compared schemes. For example, the relative difference of the power spectra for Φ is 0.04% maximum. Since the perturbed Einstein equations have much simpler form in the "screening" approach, the simulation with this code consumes less computational time, saving almost 40% of CPU hours.

Reference to paper (DOI or arXiv)

arXiv:2106.07638 [gr-qc]

Your gender (free text)

Primary author(s) : EINGORN, Maxim (North Carolina Central University); Mr. YUKSELCI, A. Emrah (Department of Physics, Istanbul Technical University); Prof. ZHUK, Alexander (Astronomical Observatory, Odessa I.I. Mechnikov National University)

Presenter(s) : EINGORN, Maxim (North Carolina Central University)

Session Classification : Discussion Panel Cosmology 3

Track Classification : Cosmology and particle physics