

Relativistic cosmological simulations in $f(R)$ gravity

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Cosmological N-body simulations are a powerful tool to test GR and modified gravity models. Until now, all such simulations have been carried out in the post-Newtonian, quasi-static approximations. However, there are indications that such approximations break down in modified gravity theories such as $f(R)$ in certain regimes of cosmological interest. We present a code for cosmological simulations in $f(R)$ gravity based on the relativistic code "gevolution", the results obtained with the code, and the comparison with the Newtonian equivalent.