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SFDM AND STRUCTURE FORMATION

In this work, we solve the structure formation in the Universe for the scalar field model as dark matter in its hydrodynamic approximation, and for this, we implement the model in the MG-PICOLA code, which uses the COLA method, which allows solving the model with a lower computational cost but with a reduction in resolution compared to other methods such as N-body simulations. We perform numerical simulations and analyze them using the mass power spectrum (MPS) to compare with simulations that solve the model using the full Schrodinger-Poisson solution to establish the reliability scales of this method and how it matches with the scales allowed by the full method.

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