

SHORT CONTRIBUTION, ORAL ABSTRACT

MASS FUNCTION IN A FRACTAL DISTRIBUTION OF MATTER FROM PRESS-SCHECHTER FORMALISM

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The Excursion Set Theory is used for a moving barrier in order to find a mass function, which depends on the cosmic density field variance and the power spectrum for a fractal distribution of matter. By modelling an inhomogeneous dust that is characterised by fractal behaviour, the variance for an inhomogeneous galaxy distribution characterised by mass-radius fractal dimension D is determined. The mass function, which depends on the cosmic density field variance and the power spectrum, for a fractal distribution of matter is calculated like a function of the standard cosmological constants with additional dependency with the fractal dimension D and the moving barrier β parameter.

The fractal mass function is analysed respect of their dependence of the fractal dimension D and the moving barrier β parameter. Leaving constant the fractal dimension at the value most reported in the literature, the mass function shows a smooth diminish in the number of formed haloes as the β parameter increases, specially for low mass haloes where the Press-Schechter formalism tends to over predict the number of haloes. On the other hand, the mass function is quite sensitive to variations in the values of the fractal dimension, in particular for values lower $D < 2$; an increase in the halo number is consistent with an increase in the dimension of the mass clustering, but the contrary occurs for $D > 2$: as the dimension of the fractal mass clustering approaches the physical dimension of the space, the number of haloes drops dramatically.

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