Title:	Formation rates of dark matter haloes
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Keywords:	Cosmology Evolution - galaxies Formation - galaxies
Issue Date:	2011
Citation:	Bulletin of the Astronomical Society of India, 39 (4), pp. 1-30
Abstract:	We derive an estimate of the rate of formation of dark matter haloes per unit volume as a function of the halo mass and redshift of formation. Analytical estimates of the number density of dark matter haloes are useful in modeling several cosmological phenomena. We use the excursion set formalism for computing the formation rate of dark matter haloes. We use an approach that allows us to differentiate between major and minor mergers, as this is a pertinent issue for semi-analytic models of galaxy formation. We compute the formation rate for the Press-Schechter and the Sheth-Tormen mass function. We show that the formation rate computed in this manner is positive at all scales. We comment on the Sasaki formalism where negative halo formation rates are obtained. Our estimates compare very well with N-body simulations for a variety of models. We also discuss the halo survival probability and the formation redshift distributions using our method.
Description:	Only IISERM authors are available in the record.
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