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Tests of LCDM on small scales

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The LCDM model has the virtue of having strong predictive power in so far as the properties of the dark matter are concerned. For example, the mass function of dark matter halos is known to high precision, from the mass scale of the Earth to that of rich clusters. The predictive power is weakened when baryons are considered because of the complex astrophysical processes to which they can give rise. This shortcoming can be mitigated with detailed modelling which has become increasing sophisticated over the years. Neglecting such processes is dangerous and this has led to the often voiced view that LCDM suffers from a “small-scale crisis”, that is that it disagrees with data on the scales of galaxies and below. I will discuss this perceived crisis and focus on claims that the abundance and properties of the galaxies recently discovered at very high redshift by the JWST are inconsistent with LCDM.

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