

Galaxy formation in SPH simulations; physical and numerical effects

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Abstract We discuss the results of recent cosmological simulations which employ smoothed particle hydrodynamics (SPH) to model the baryonic component. We show that disks with sizes not far from those of large spiral galaxies can be achieved with enough mass and force resolution. This opens the possibility that the angular momentum catastrophe might be primarily numerical in nature and that a realistic galaxy formation is not impossible in cold dark matter models. On the other end, when and if convergence of the results can be achieved with SPH is not yet clear. In fact, problems are encountered even in simple tests where the formation of an isolated galaxy is followed at resolutions much higher than those adopted in state-of-the-art cosmological runs.