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Too small to succeed? Lighting up massive dark matter subhaloes of the Milky Way

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Using Constrained Local UniversE Simulations (CLUES) of the formation of the Local Group in a cosmological context we investigate the recently highlighted problem that the majority of the most massive dark subhaloes of the Milky Way are too dense to host any of its bright satellites. In particular, we examine the influence of baryonic processes and find that they leave a twofold effect on the relation between the peak of the rotation curve and its position (Vmax and Rmax). Satellites with a large baryon fraction experience adiabatic contraction thus decreasing Rmax while leaving Vmax more or less unchanged. Subhaloes with smaller baryon fractions undergo a decrease in Vmax possibly due to outflows of material. Furthermore, the situation of finding subhaloes in simulations that lie outside the confidence interval for possible hosts of the bright MW dwarf spheroidals, appears to be far more prominent in cosmologies with a high sigma8 normalisation and depends on the mass of the host. We conclude that the problem cannot be simply solved by including baryonic processes and hence demands further investigations.

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