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# Tidal evolution of dwarf galaxies with shallow dark matter density profiles

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**Abstract.** One of the scenarios for the formation of dwarf spheroidal galaxies in the Local Group proposes that the objects formed from late type dwarfs via tidal interaction with bigger galaxies such as the Milky Way and Andromeda. The scenario naturally explains the morphology-density relation observed for dwarf galaxies in the Local Group. Using $N$-body simulations we study the long-term tidal evolution of dwarf galaxies in the vicinity of the Milky Way. The dwarf galaxies were initially composed of stellar disks embedded in dark matter haloes of different inner density slopes including shallow ones recently obtained in $N$-body+hydro simulations of dwarf galaxy formation in isolation. Such progenitors were placed on five different orbits around the Milky Way and their evolution was followed for 10 Gyr. The outcome of the evolution, in terms of the mass loss, morphological transformation and randomization of stellar orbits depends very sensitively on the inner density slope of dark matter. The effects of tides are stronger for dwarfs with shallower slopes; they are more heavily stripped, in some cases down to the scale of ultra-faint satellites of the Milky Way or even dissolved completely with obvious implications for the missing satellites problem. The morphological evolution of the stellar component, from rotationally supported disks to spheroids dominated by random motions, also proceeds faster. In addition, bars which usually form at the first pericenter passage are created more easily and live longer in dwarfs with shallow dark matter density profiles on extended orbits.