

Andromeda's asymmetric satellite system as a challenge to cold dark matter cosmology

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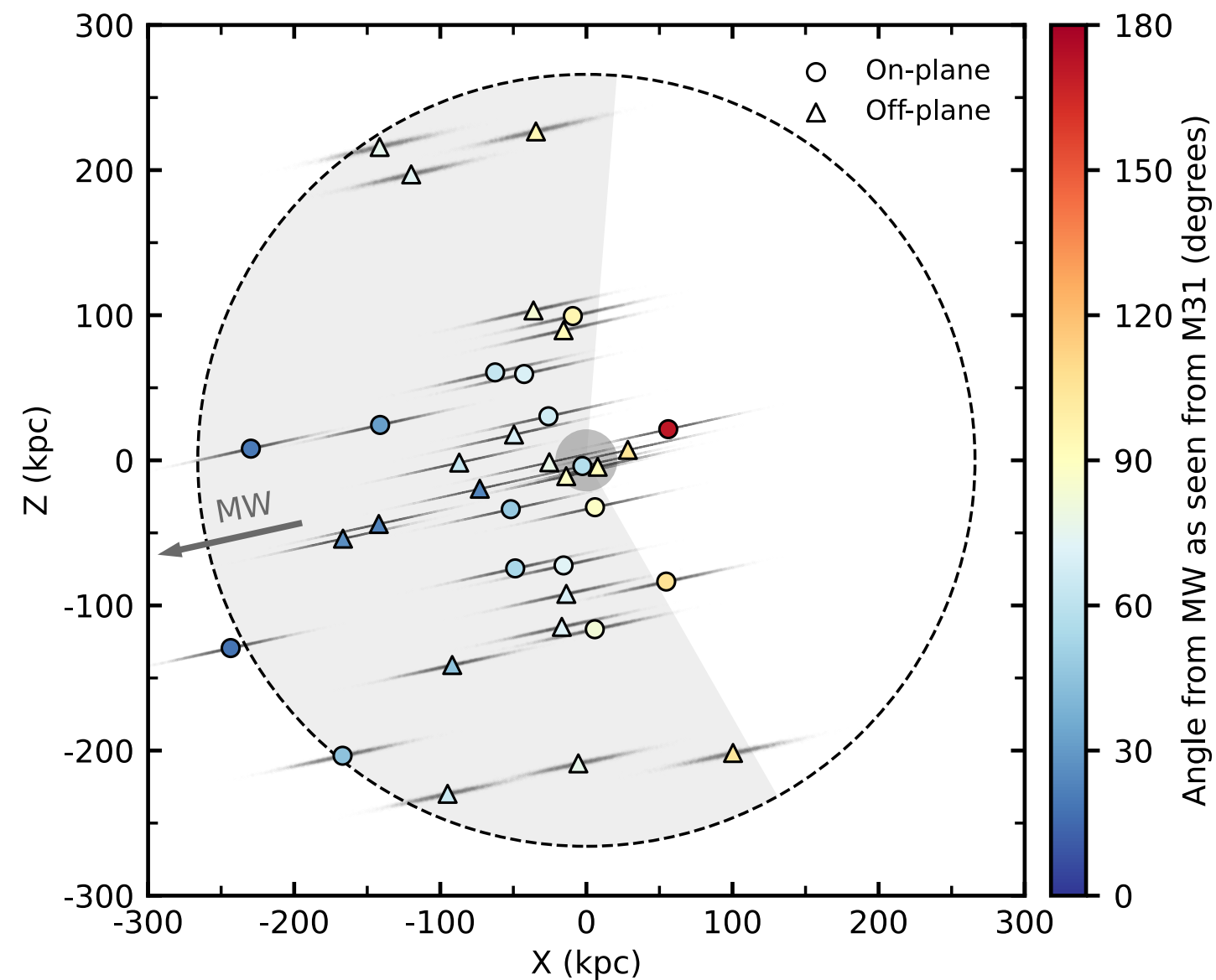


Phase-space correlations in Andromeda's satellite galaxy system

The Andromeda galaxy (M31) hosts a system of dwarf satellite galaxies with two concurrent, anomalous features:

- 1) A **thin, co-rotating plane** of satellite galaxies
- 2) A prominent **global asymmetry** in its dwarf distribution

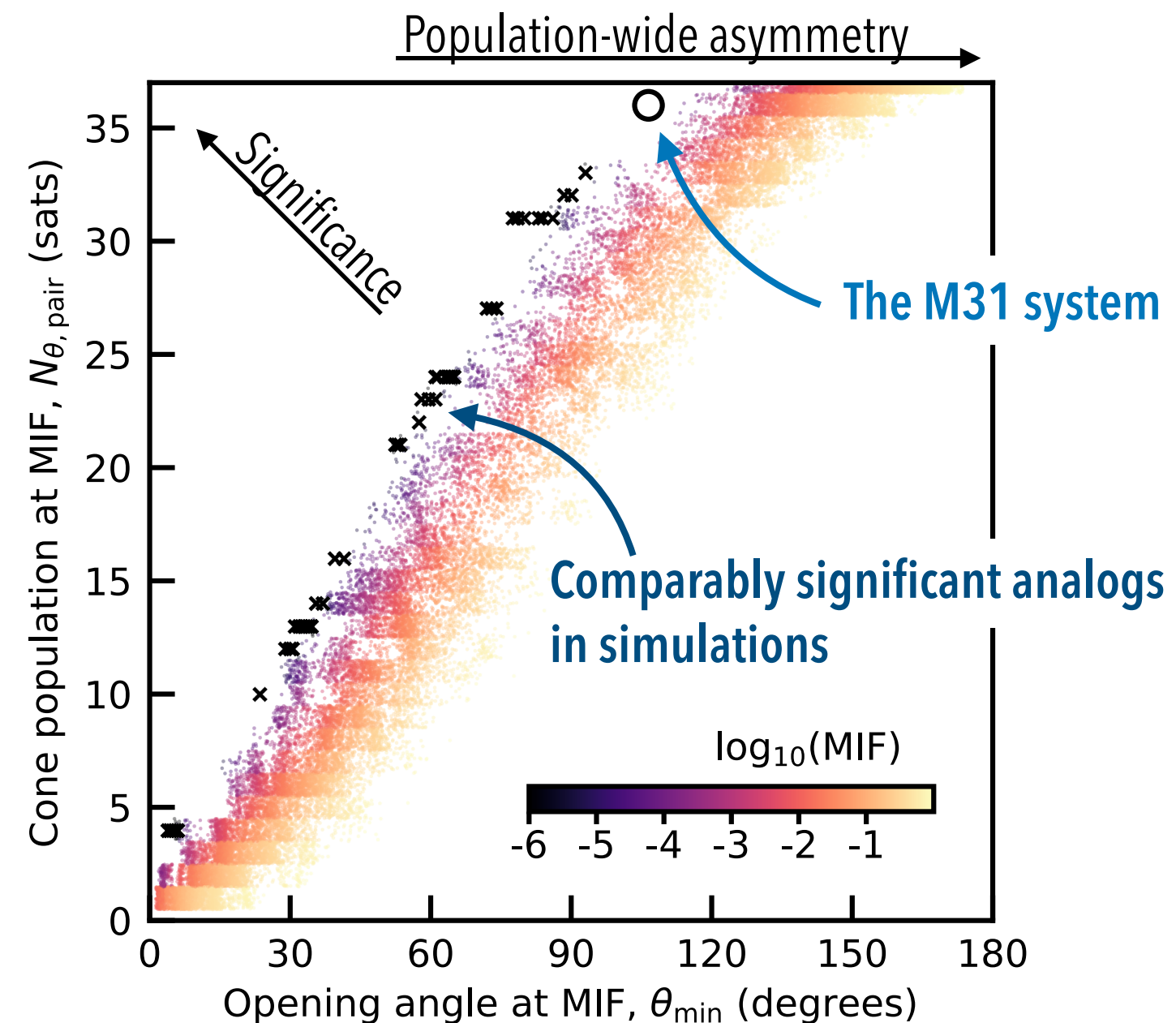
Is the less-studied asymmetry **as problematic** as the satellite plane in a full cosmological context?



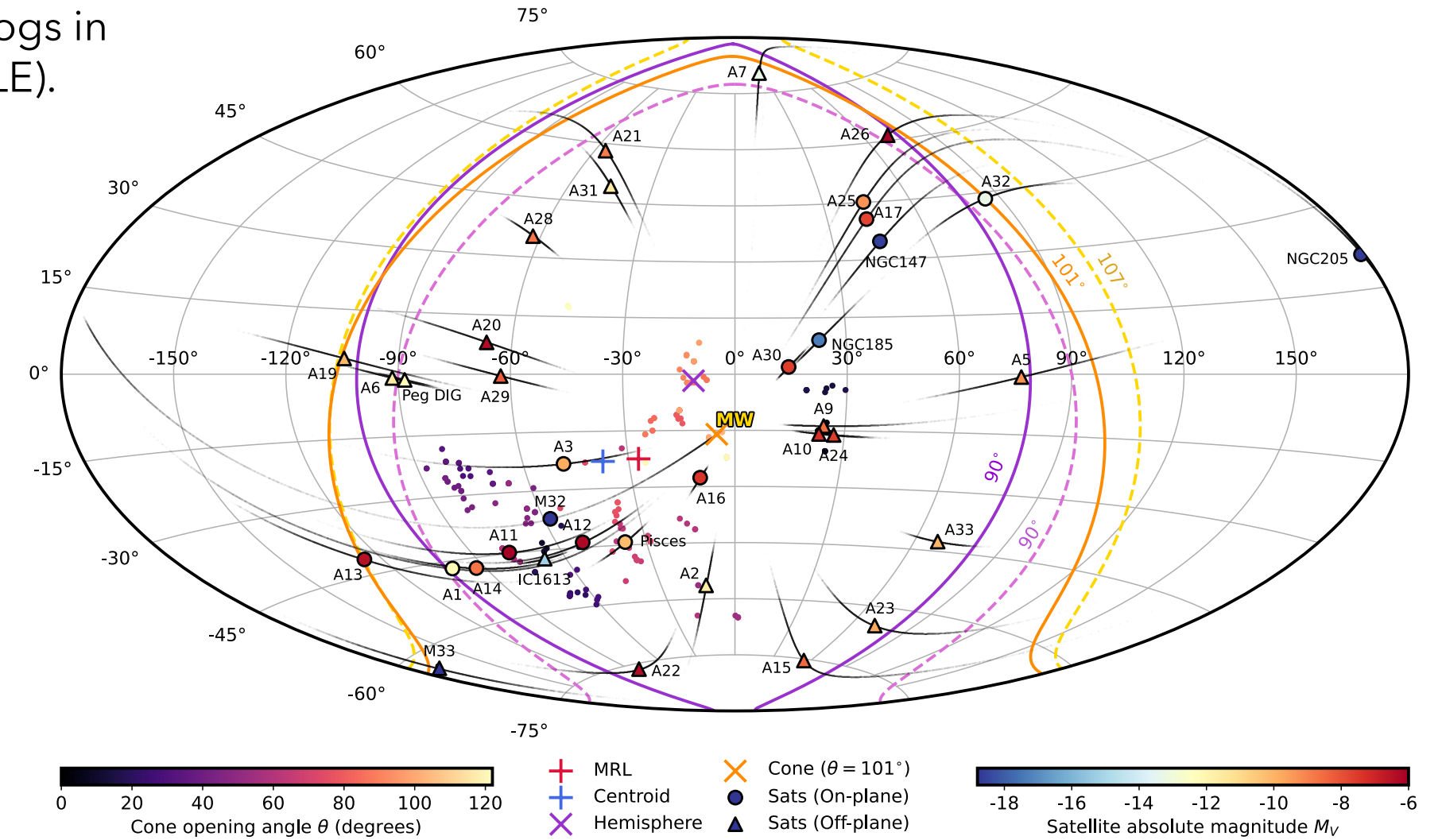
A striking outlier from cosmological expectations

We **characterise the observed degree of asymmetry**, and examine the incidence of similarly asymmetric Andromeda analogs in **hydrodynamic large-volume simulations** (TNG/EAGLE).

Less than 0.3% of Andromeda-like systems show a comparably significant asymmetry (or **0.5%** when accounting for possible incompleteness).



Come chat with me afterwards!
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No simulated analog is as **globally lopsided** as the observed Andromeda system!

