

Interest: What (structures) can we find in the Universe ?

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work on: **Morphology of dark matter halos**

in collaboration with Emmanuel Nezri, Katarina Kraljic, Carlo Schimd,

Friday 26<sup>th</sup> November, 2021, IPhU Dark Matter day

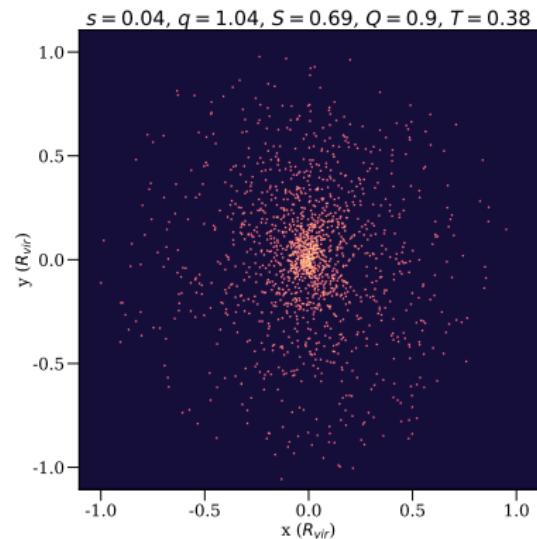
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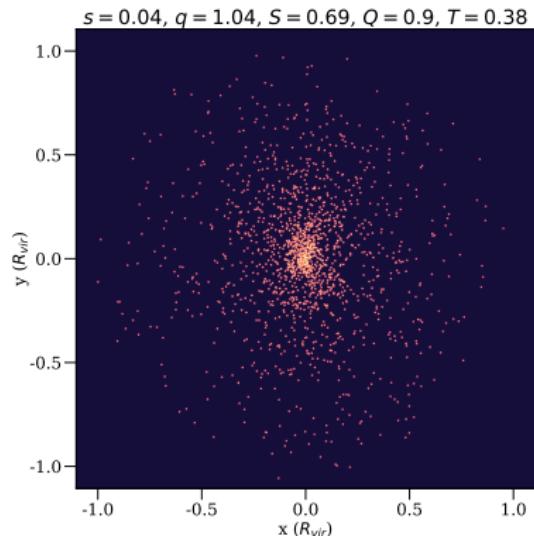
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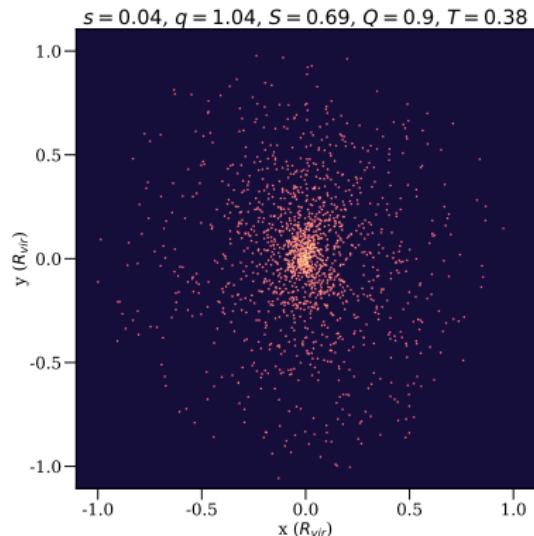
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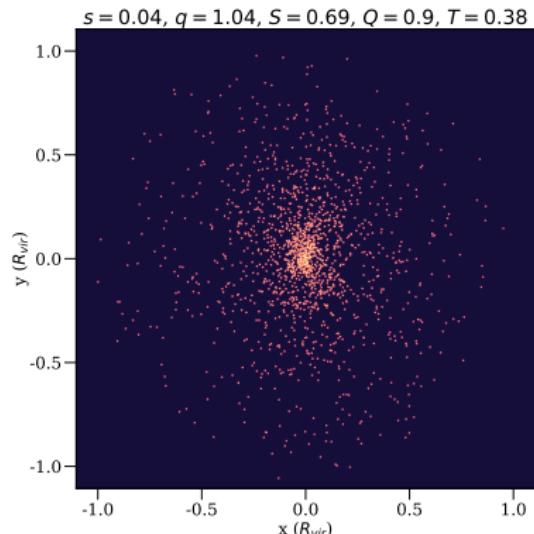
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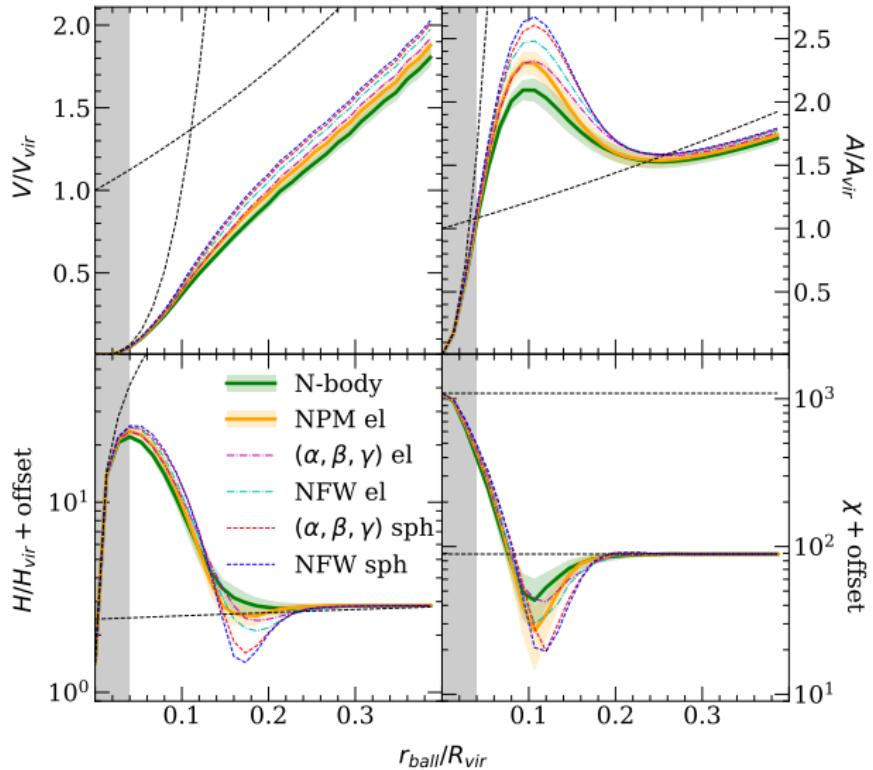
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In  $d = 3$ , the MFs are the volume  $V$ , area  $A$ , integral mean curvature  $H$  and Euler characteristic  $\chi$

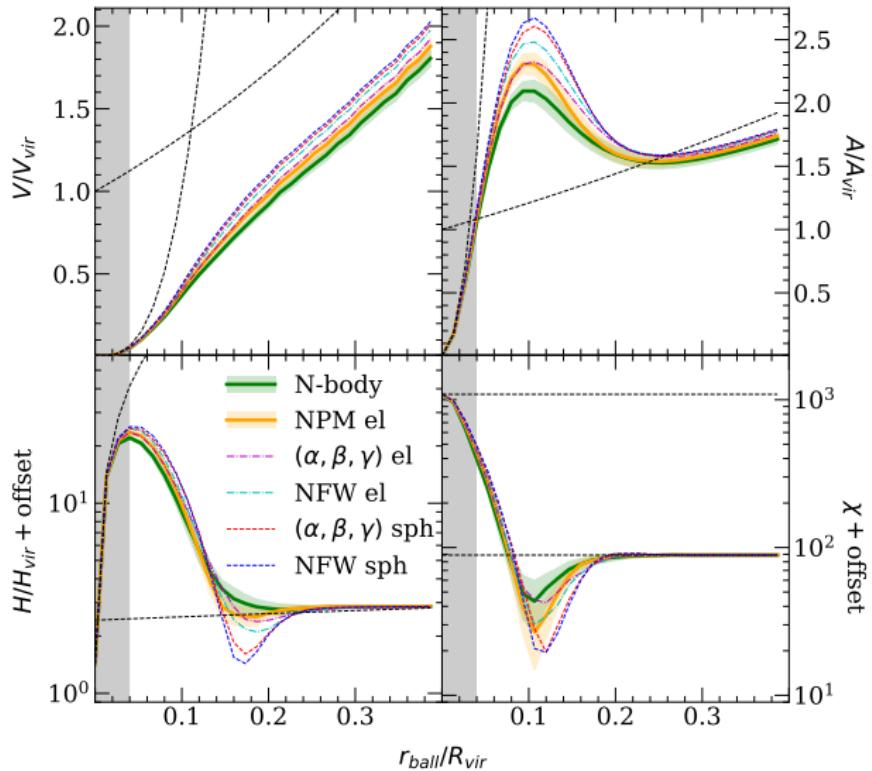
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Results:

Smooth mass distribution  
and N-body haloes  
have different MFs

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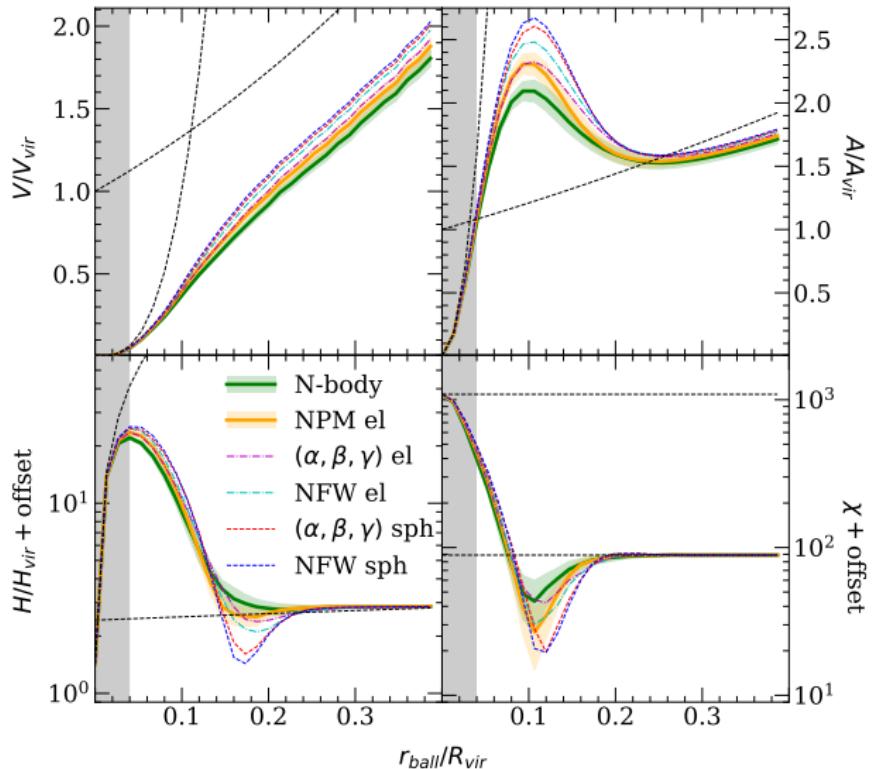
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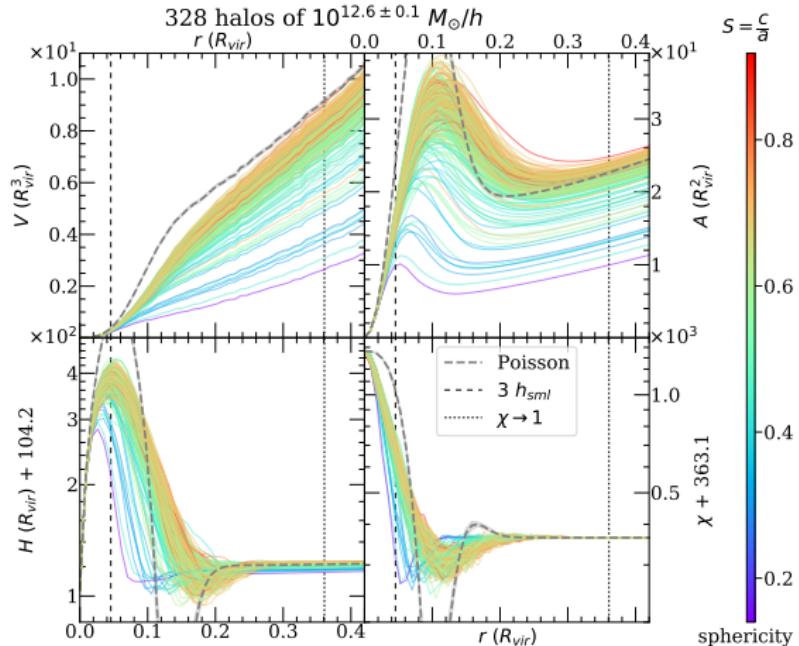
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Future:

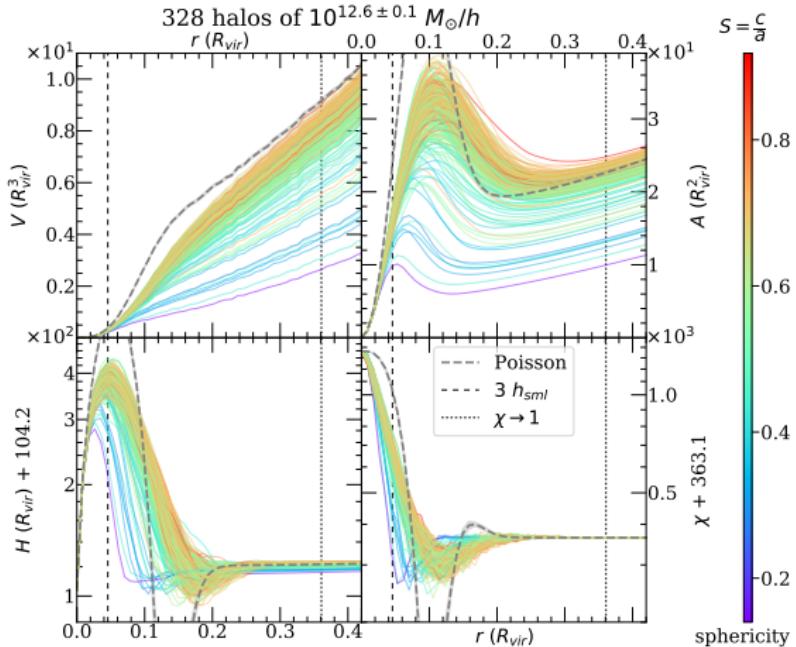
Need to add substructures  
in the models

Influence of standard halo parameters on MFs:  
 Sphericity, mass, virialisation, concentration, profile slope



# HALO MORPHOLOGY IN N-BODY SIMULATIONS

Influence of standard halo parameters on MFs:  
Sphericity, mass, virialisation, concentration, profile slope



Current work: influence of redshift and dark energy on MFs using the DEUS simulations  
dark energy models used: constant  $\Lambda$ , Ratra-Peebles, SUGRA, phantom  $w = -1.2$   
Rasera+10, Alimi+12

THANKS

QUESTIONS ?