Supernova feedback in dwarf SIDM halos

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MOTIVATION

CDM simulations are in tension with dSphs?

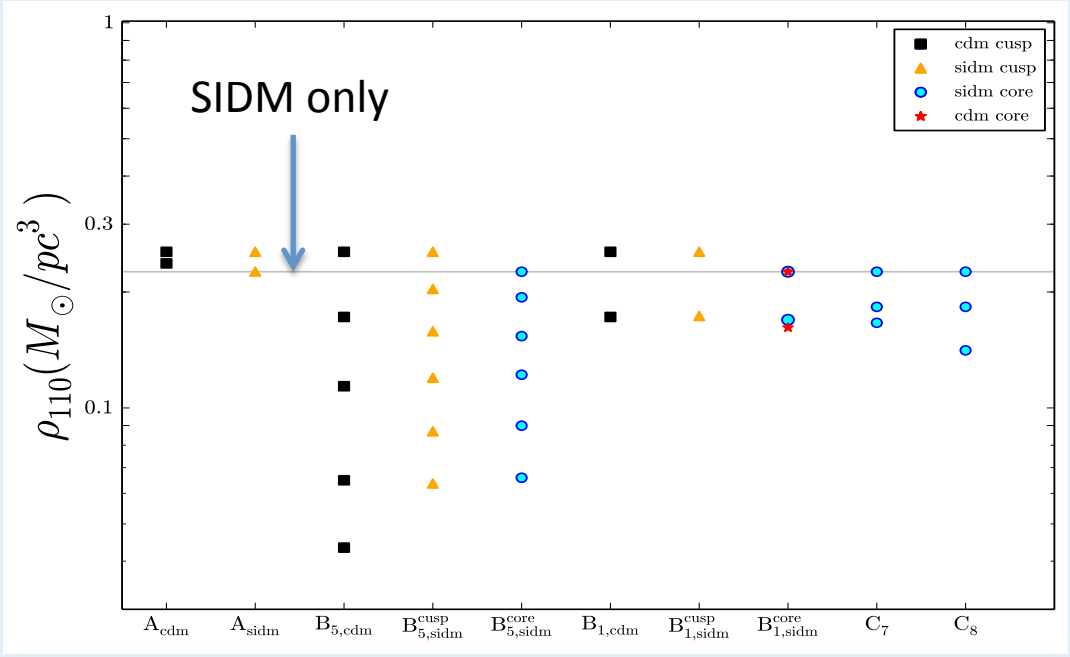
- Cusp-core problem
- Too big to fail

dSphs consistent with halos with core sizes of ~1kpc.

Core sizes typically found in DM with self interactions and a constant cross section per unit mass $\sigma_T/m=1$

BARYONS are important in :

- CDM simulations (**YES**)
- SIDM runs **EXPLORED IN THIS WORK**



SIMULATIONS

Feedback from SNe is introduced by a ***time-varying Hernquist potential***

$$\vec{a} = \frac{-GM_{gal}(t)}{[r-b(t)]^2}\frac{\vec{r}}{r}$$

$$b=r_{1/2}(\sqrt{2}-1)$$

Parameters :

σ_T/m = 1cm^2/g

ε= 10pc

N_p=3x10^6

M_{DM}= 2.3x10^9

$r_{1/2}$= 100pc

RESULTS

Low energy blowouts mildly modify the potential and form a ~300 pc core, but fail to solve the TBTF problem, not better than CDM.

Massive blowouts explain the TBTF issue in CDM and SIDM but more are needed in SIDM

For more ask for details.