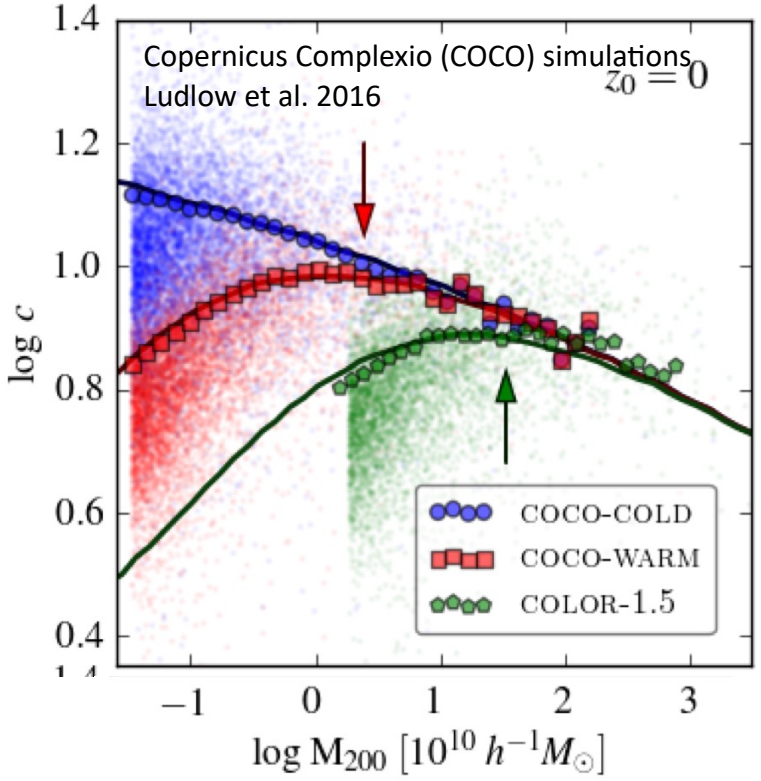
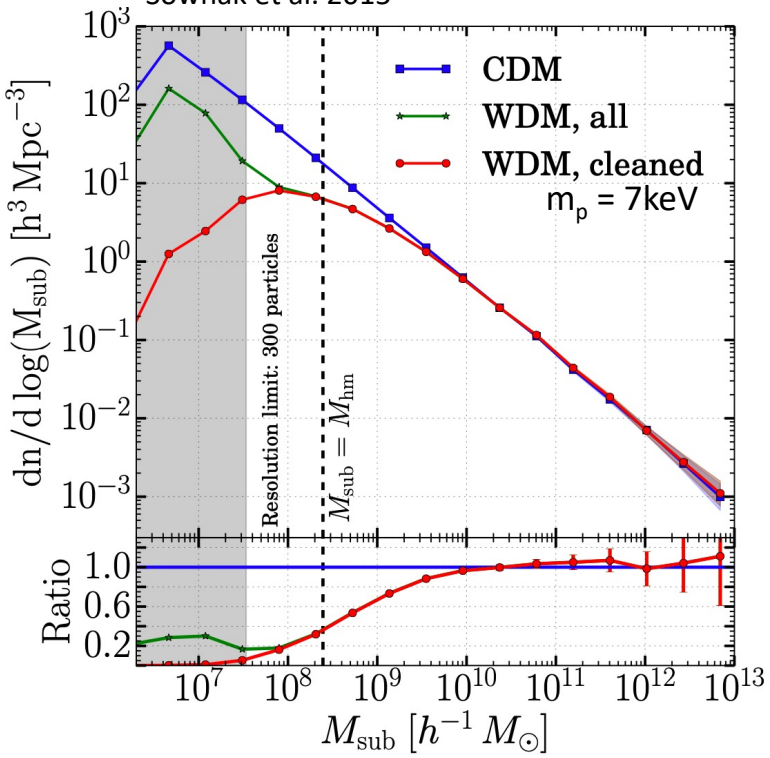
Cold vs Warm dark matter observables

Mass-Concentration relation



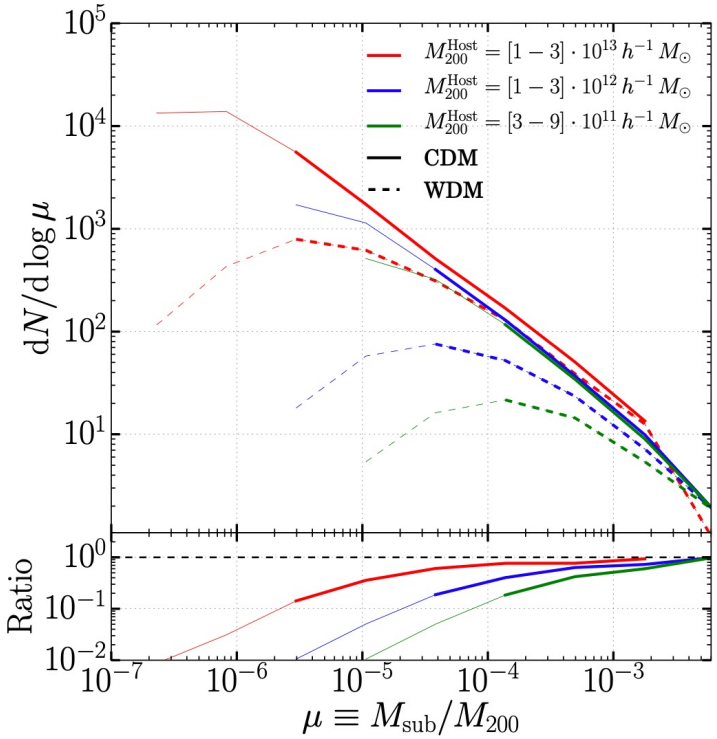
Halo mass function

Sownak et al. 2015



Sub-Halo mass function

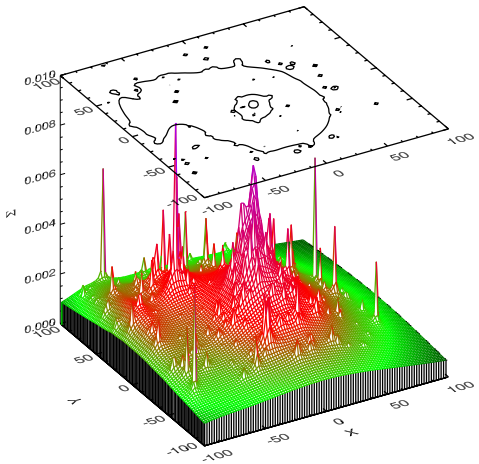
Snowak et al. 2017

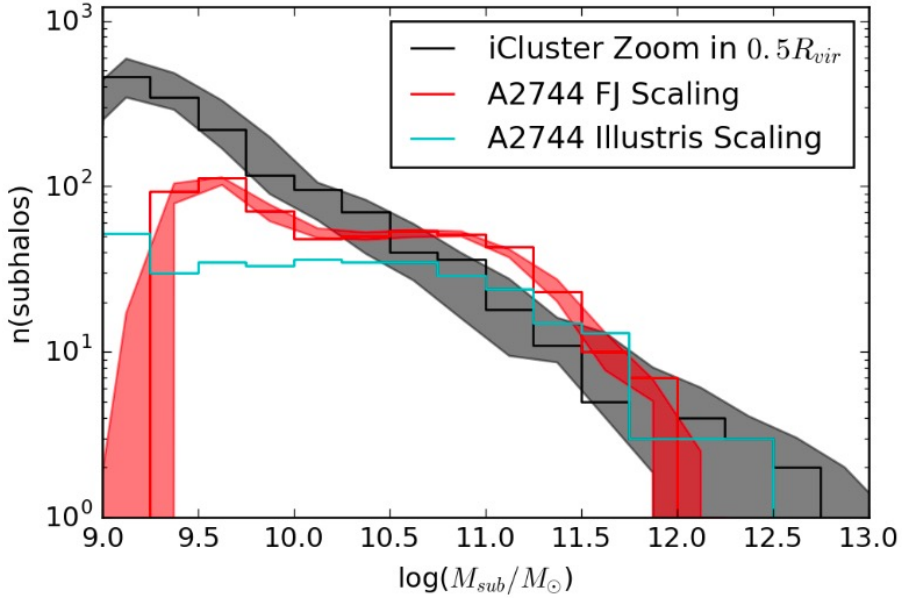


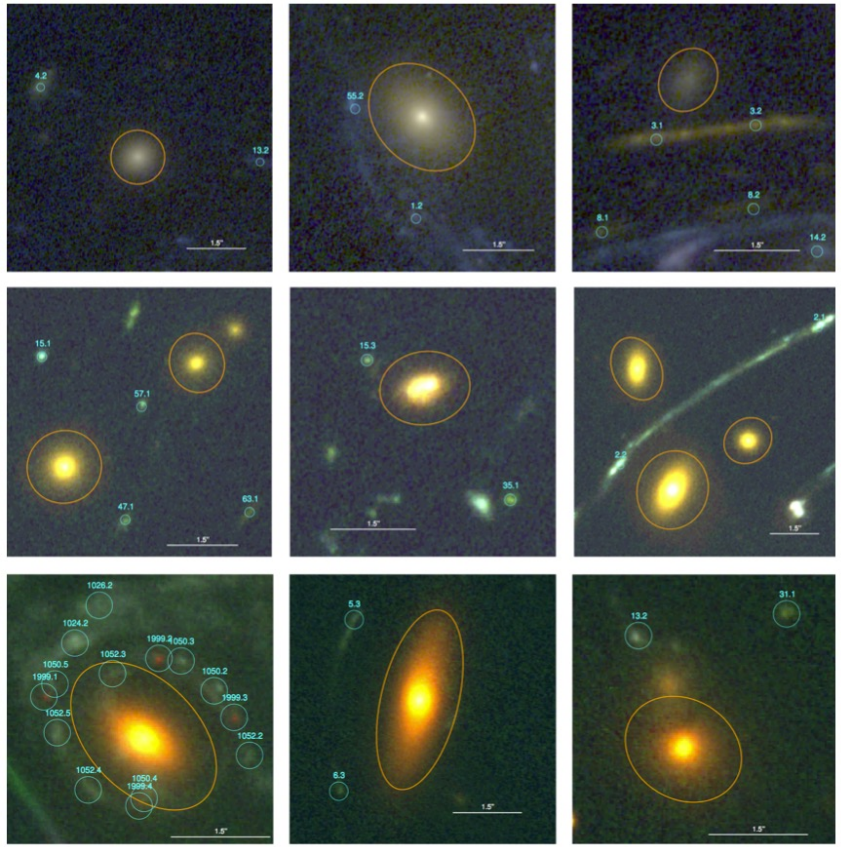
DM tidal stripping
Strong-Lensing in galaxy clusters

- Modeling of DM distribution with strong-lensing constraints
- Comparison of subhalo mass function with hydro-simulations

Natarajan et al. 2017





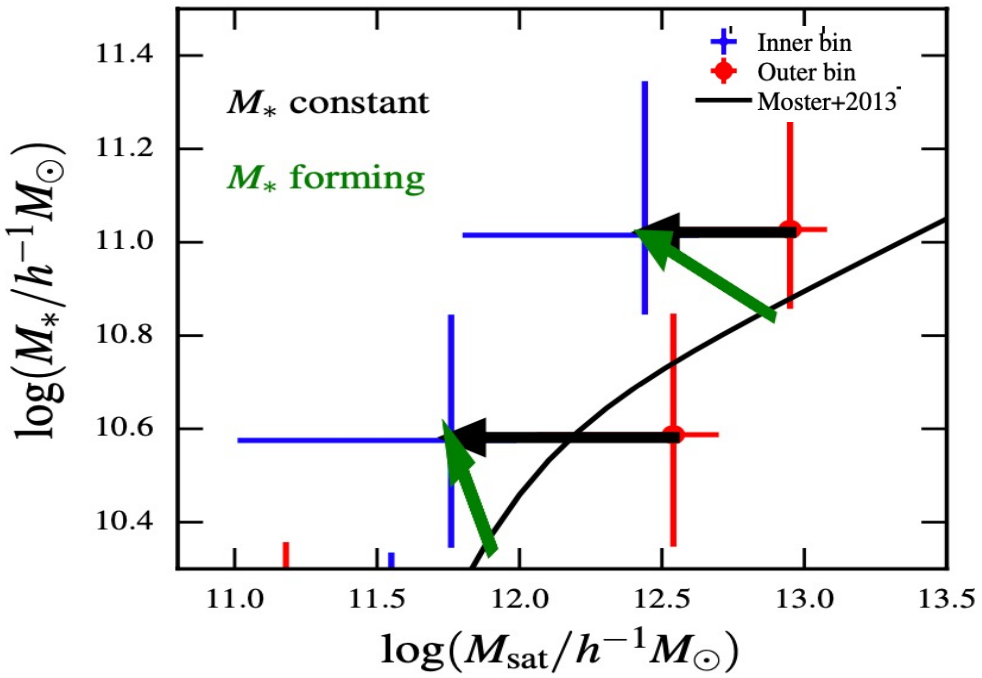


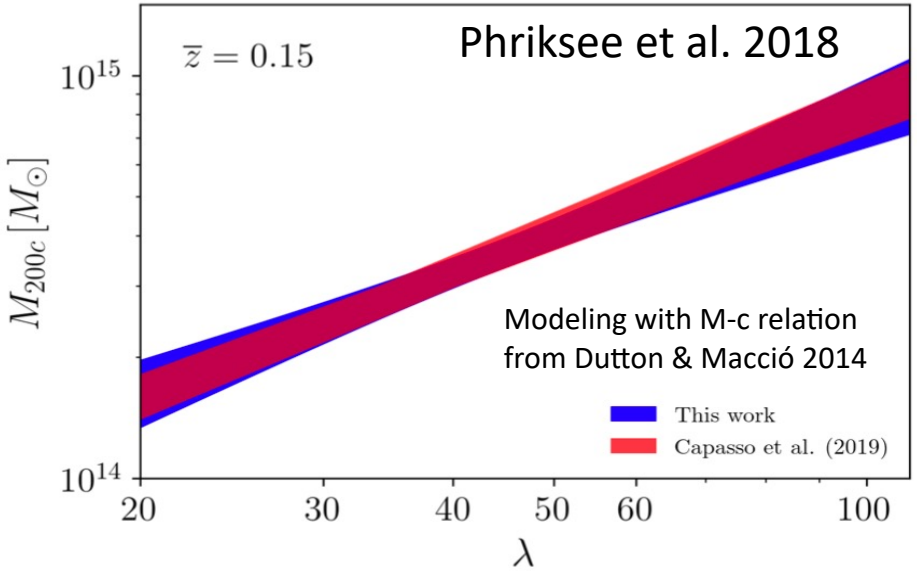
DM tidal stripping & M-c relation

Stacking of weak-lensing in galaxy-clusters

Credit: Supercluster Saraswati (DECaLS)

Niemiec et al. 2017



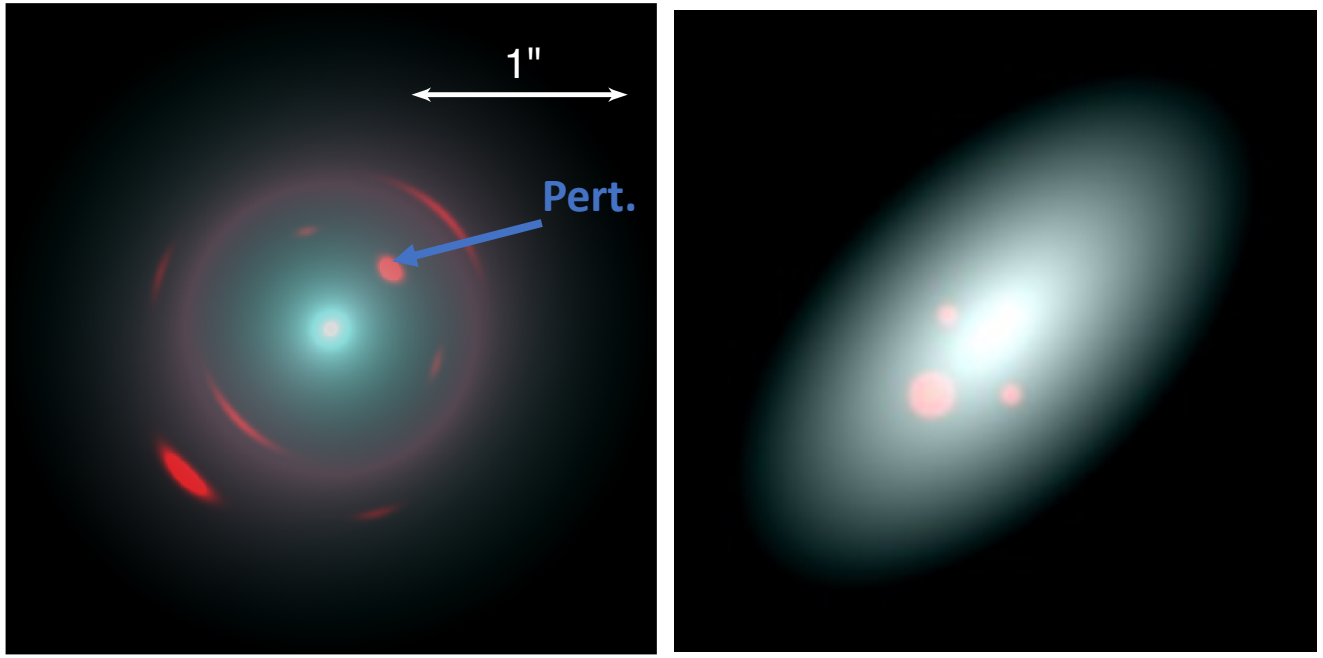


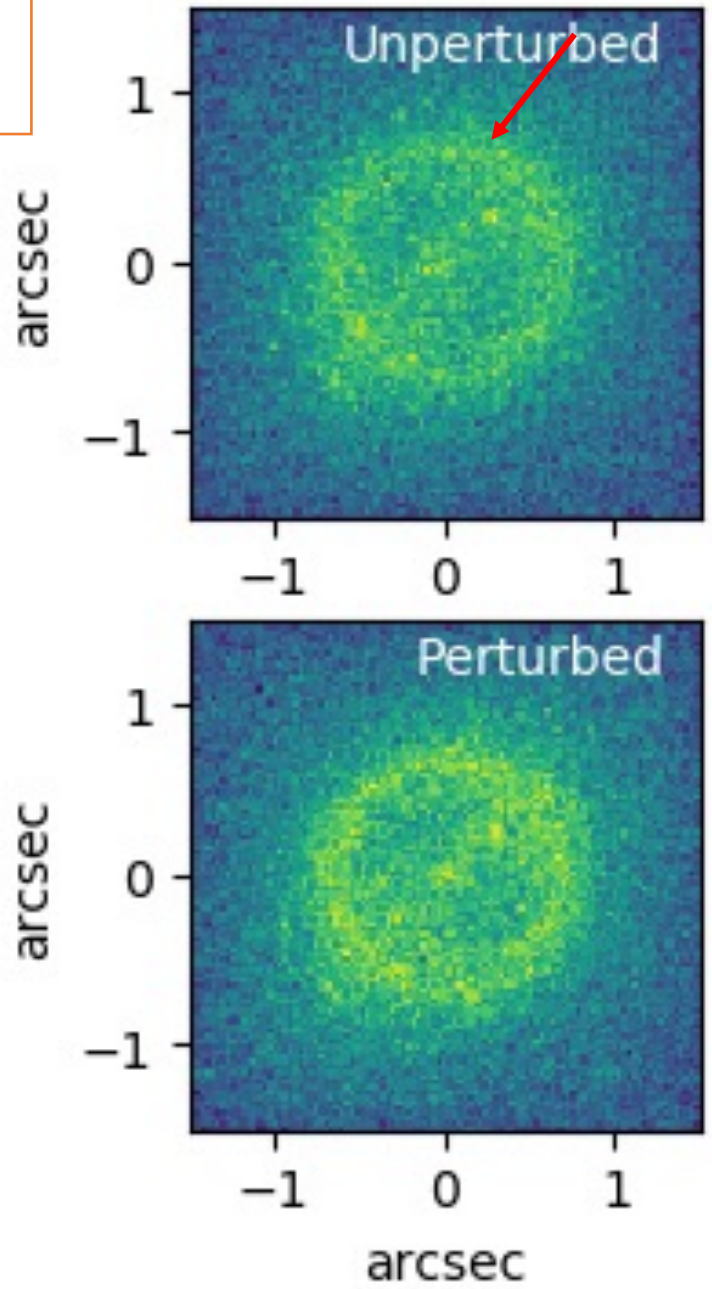
Testing DM with HARMONI@ELT

HARMONI: High-resolution IFU. First light: 2027

Main lens σ = 200 km/s, mag_R = 21.9, z = 0.31, $M_{tot} = 10^{13}\ M_\odot$

Perturbation GC : σ = 30 km/s, r_c=30 pc, r_t=300 pc, $10^8\ M_\odot$





=> Clumps are much brighter in the image plane => Detectable