

Galaxy Cluster Cosmology

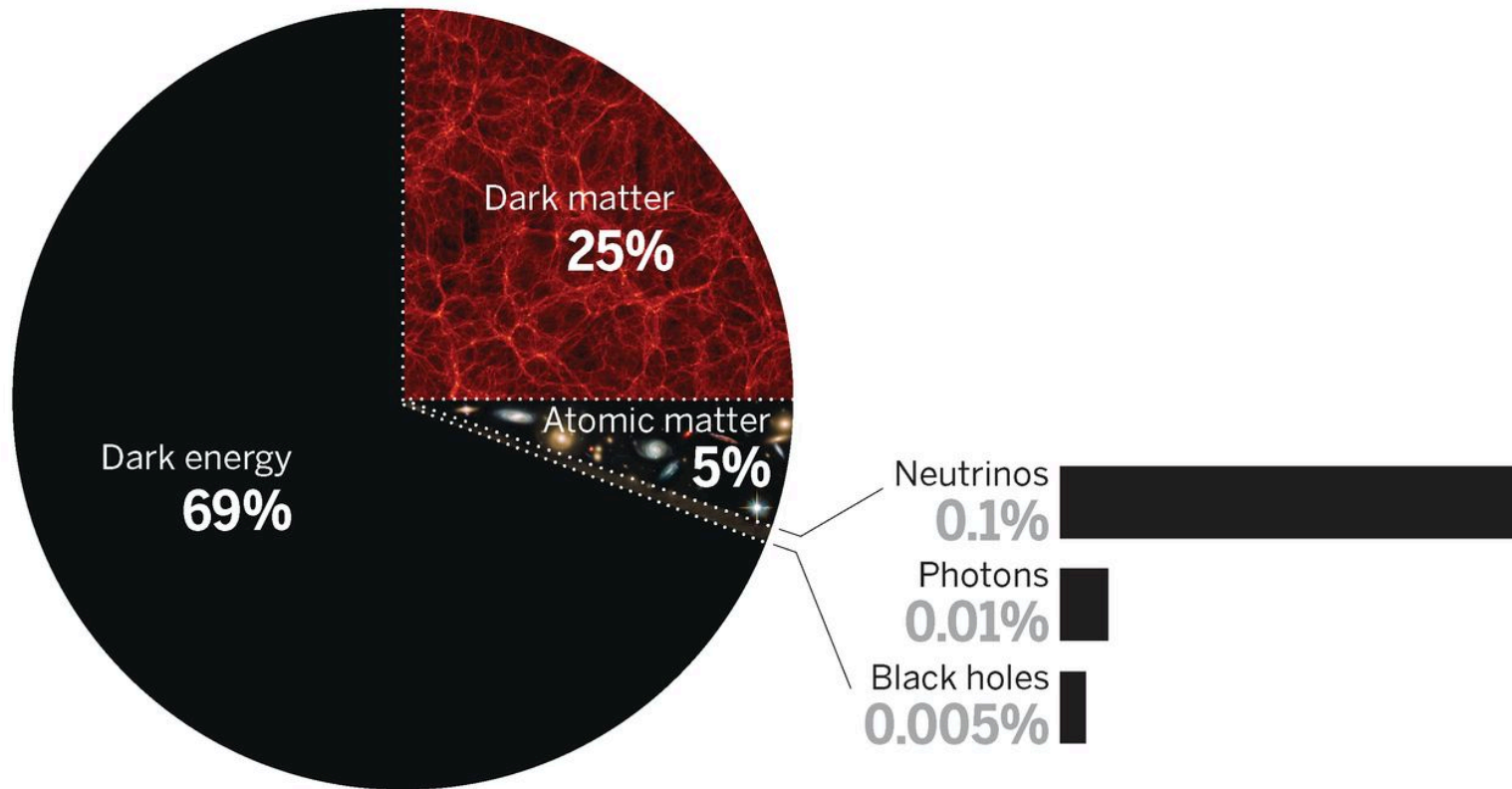
Sebastian Bocquet

Cosmic Frontier Theory & Computing Postdoc



<http://chandra.harvard.edu/photo/2006/1e0657/>

The Universe

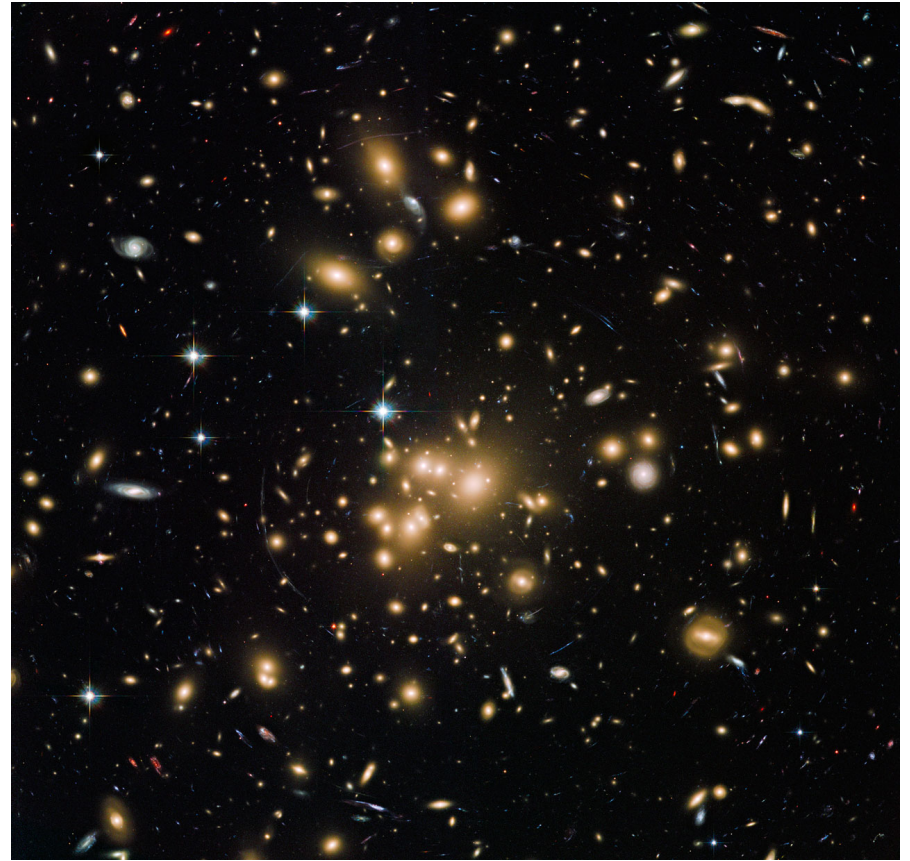






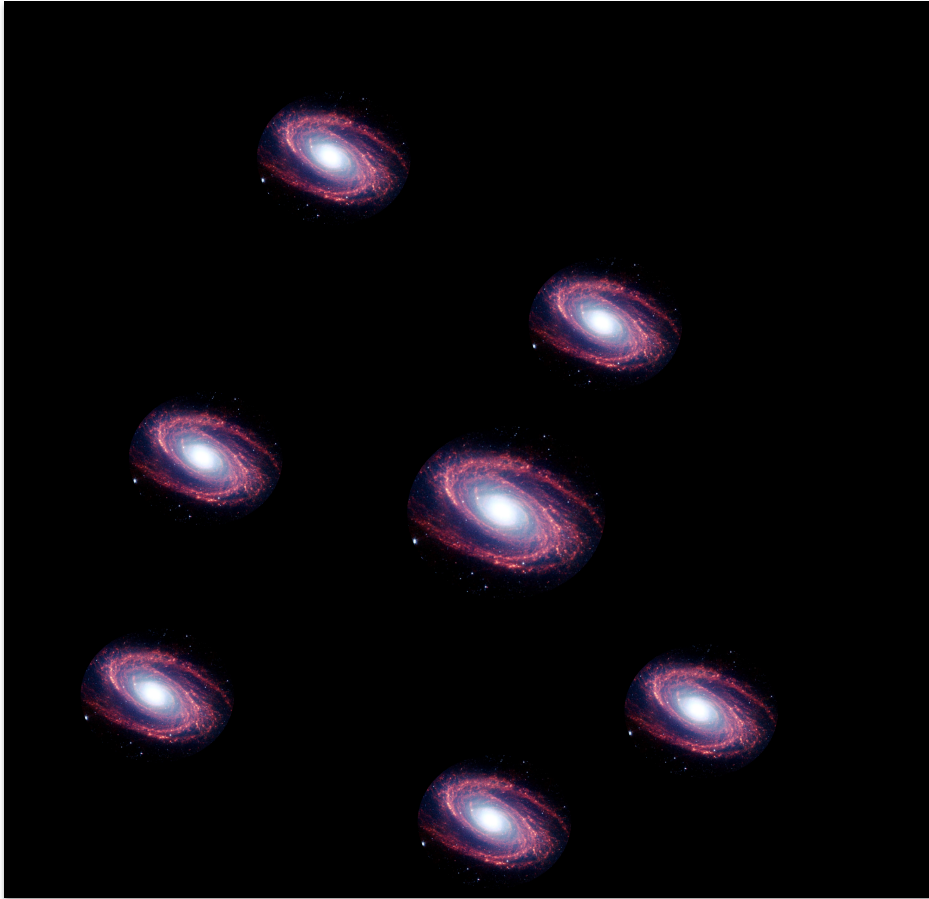
Credit: NASA, ESA, and J. Lotz, M. Mountain, A. Koekemoer, and the HFF Team (STScI)

<http://www.spacetelescope.org/images/heic1401a/>



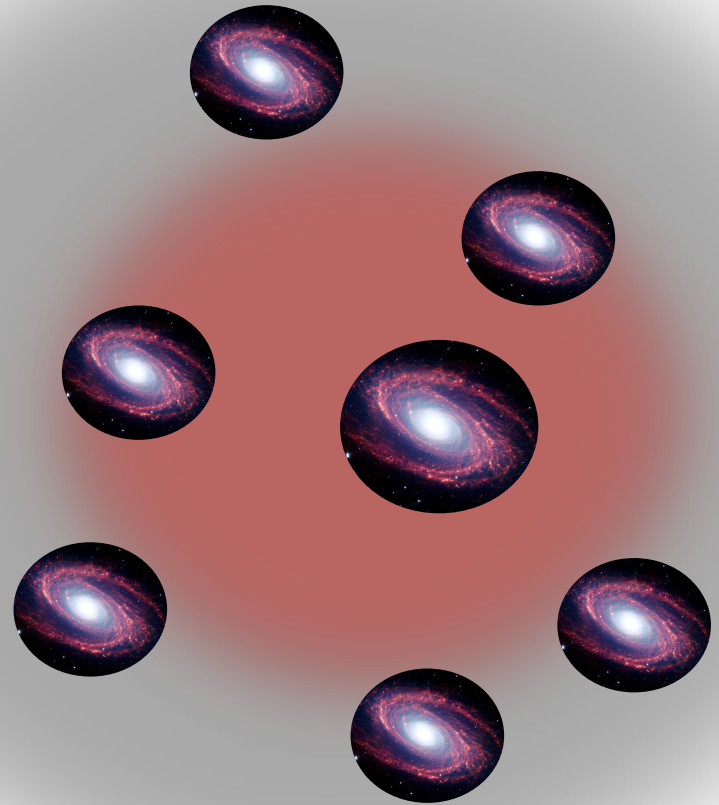
Credit: NASA, ESA, the Hubble Heritage Team (STScI/AURA), J. Blakeslee (NRC Herzberg Astrophysics Program, Dominion Astrophysical Observatory), and H. Ford (JHU) <http://www.spacetelescope.org/images/heic1317a>

What we see
(in the optical)



galaxies

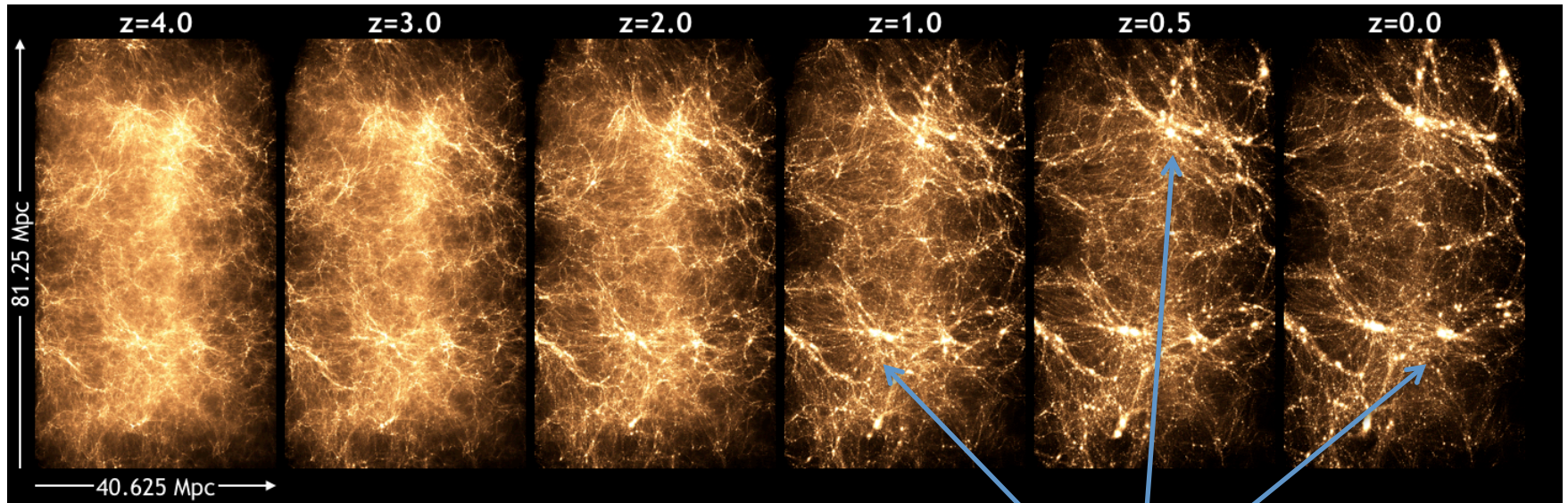
What there is



Galaxies & hot gas in
a dark matter halo

Structure formation in numerical simulations

The Q Continuum Simulation: Heitmann et al., 2015 (arXiv:1411.3396)

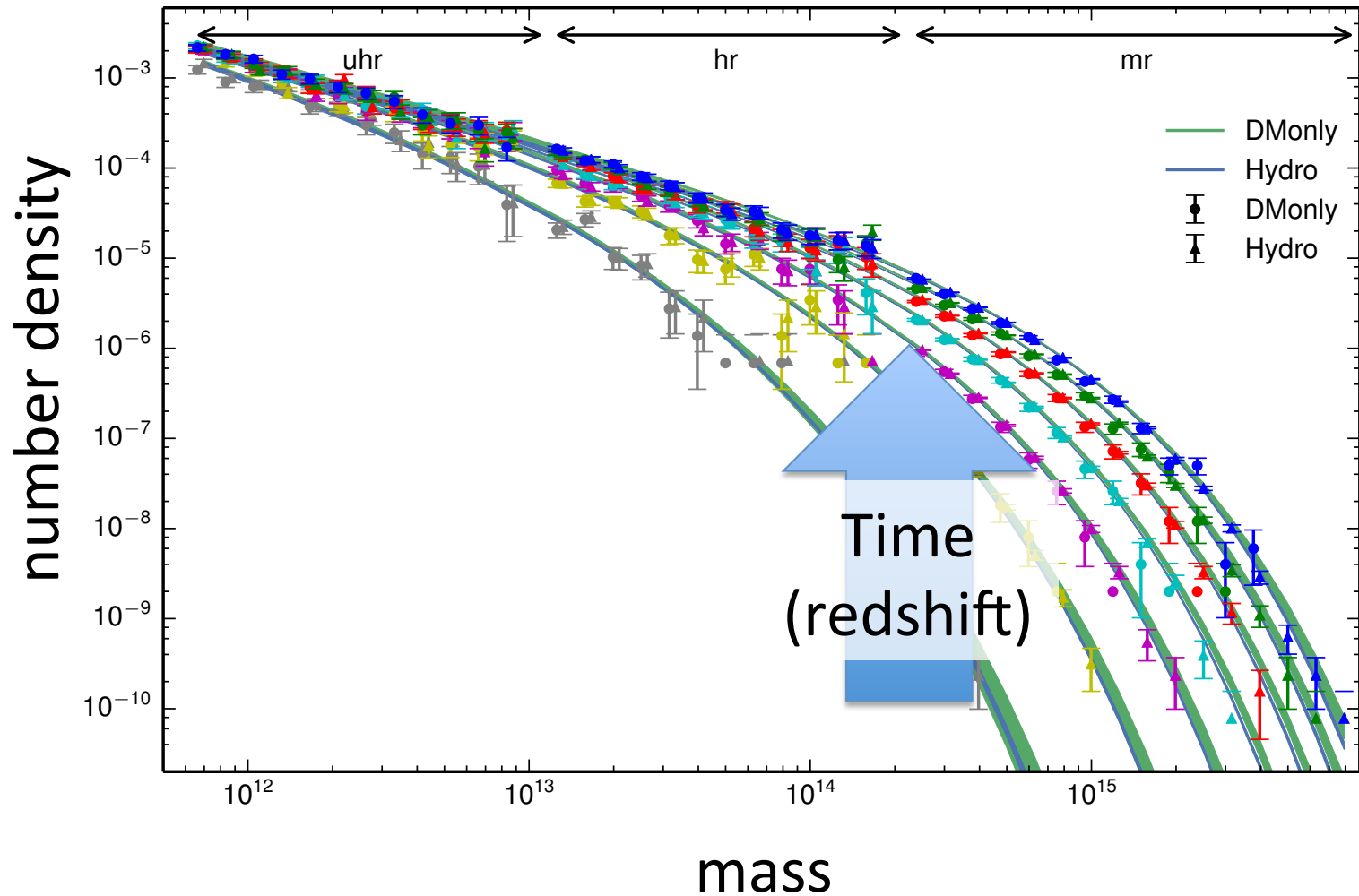


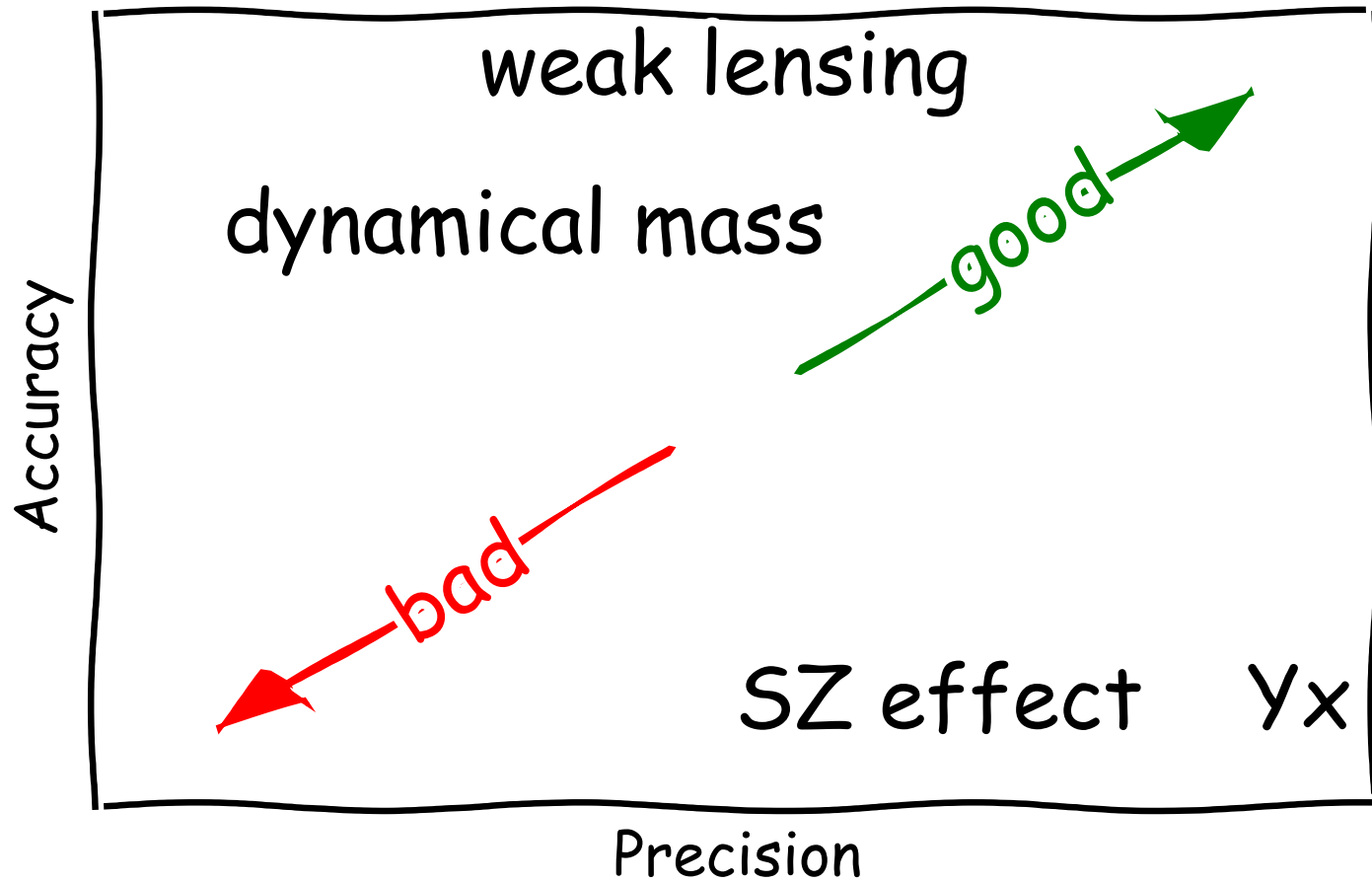
dark matter halo

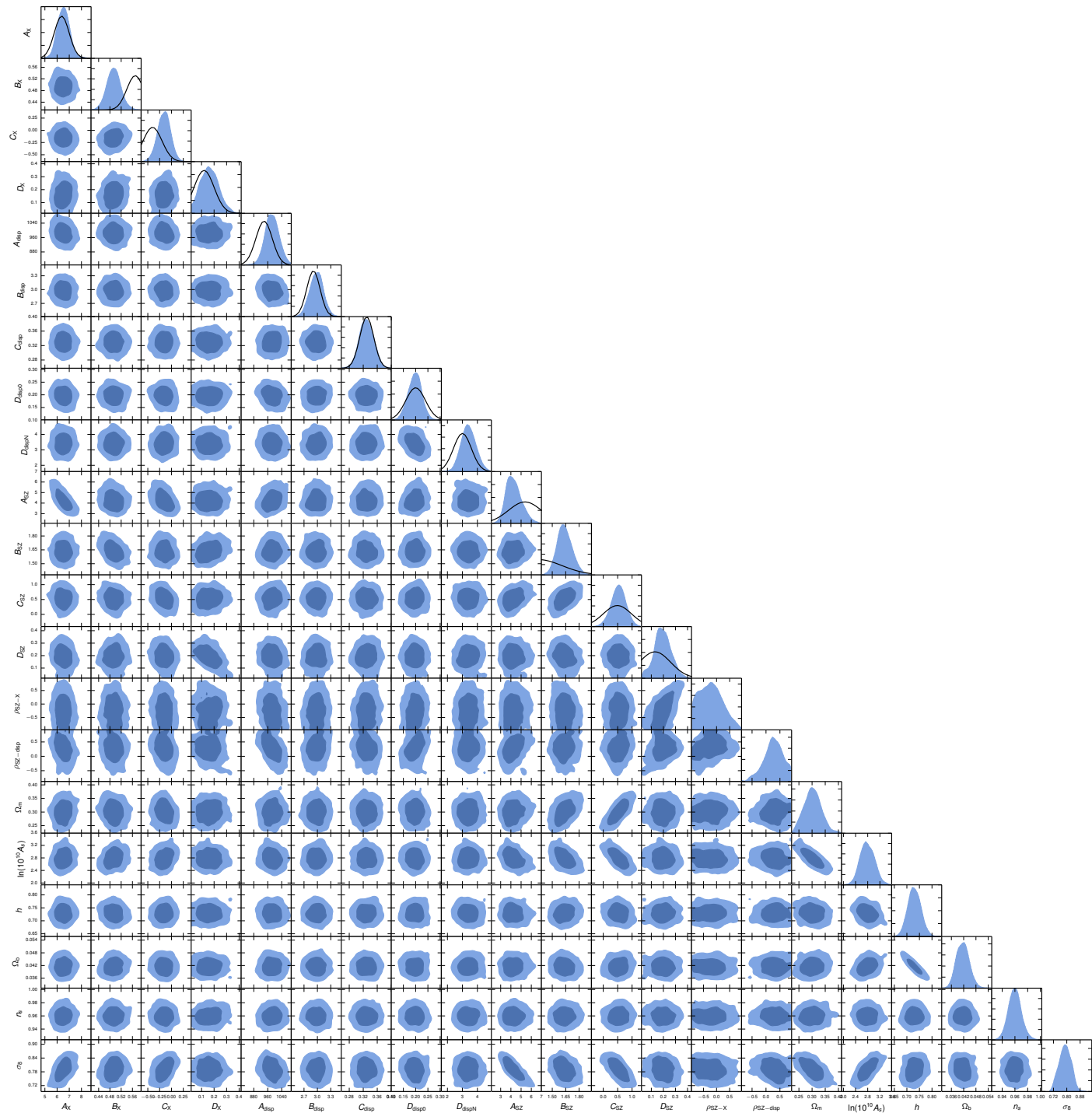
dark matter clumps \leftrightarrow dark energy acts as repulsive force

Halo Mass Function

SB et al. 2016 (arXiv:1502.07357)





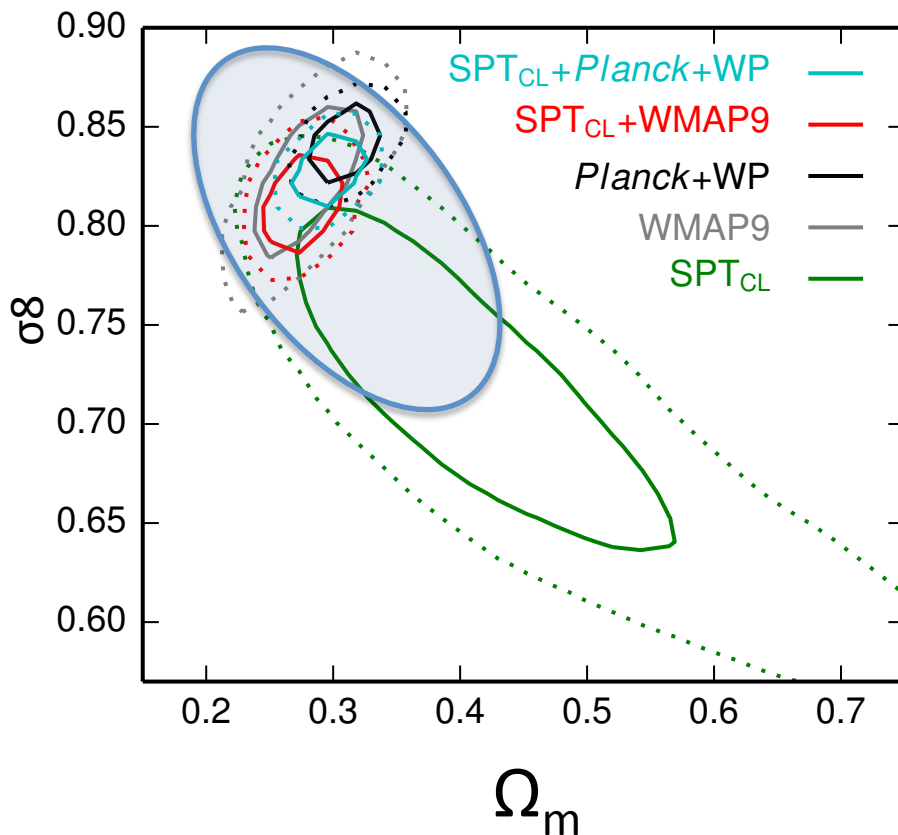


Flat Λ CDM & w CDM cosmology

SPT-SZ survey

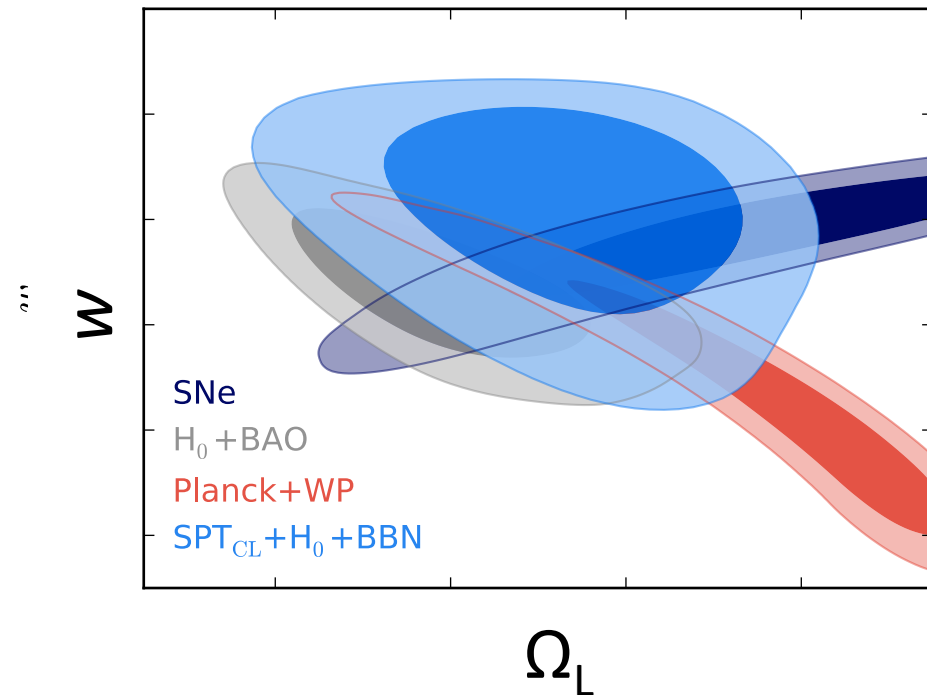
First 720 deg²

SB et al. 2015 (arXiv:1407.2942)



Full 2500 deg²

de Haan et al., in prep.



Growth of Structure

