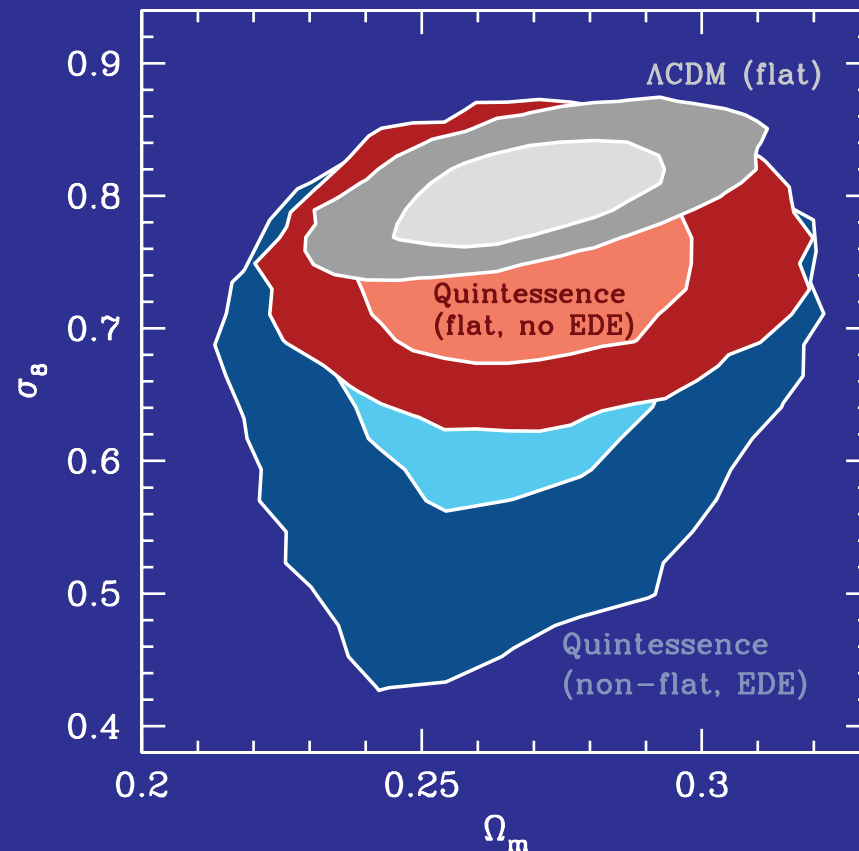


# Quintessence Falsified?

- No **excess** numbers of massive  $z > 1$  X-ray or SZ clusters with Gaussian initial conditions (Jee et al 2009, Brodwin et al 2010)
- No **excess** power in **gravitational lensing** at high  $z$  relative to low  $z$  (Bean 0909.3853)



Mortonson, Hu, Huterer  
(2009 and in prep)

- Given **astrophysical systematics**, expect purported  **$2\sigma$  violations** of smooth dark energy predictions will be **common** in coming years!

# Future Improvements

- **Future Stage IV** (SNAP+Planck) predictions sharpened by 2-3 and more importantly provide control of **systematic errors**

