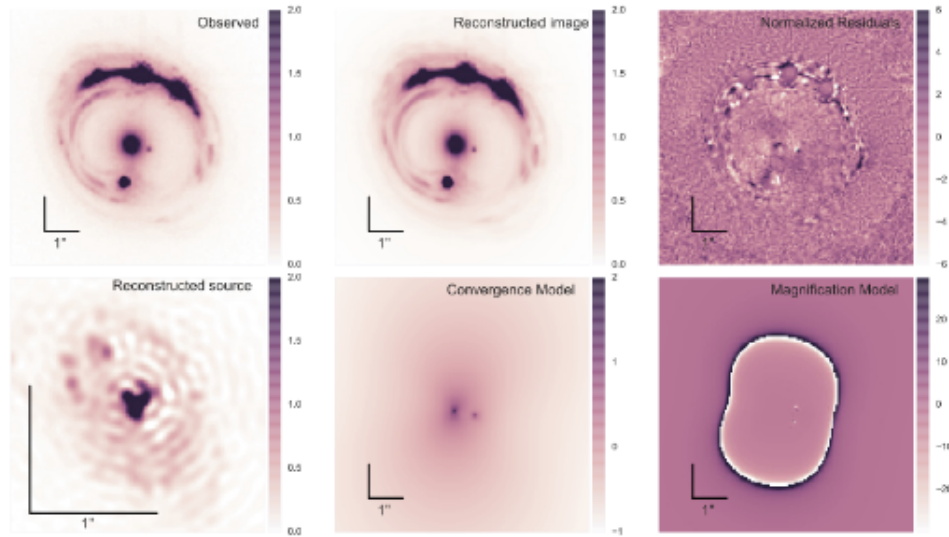


Substructure RXJ1131-1231

Birrer, AA & Refregier 2017





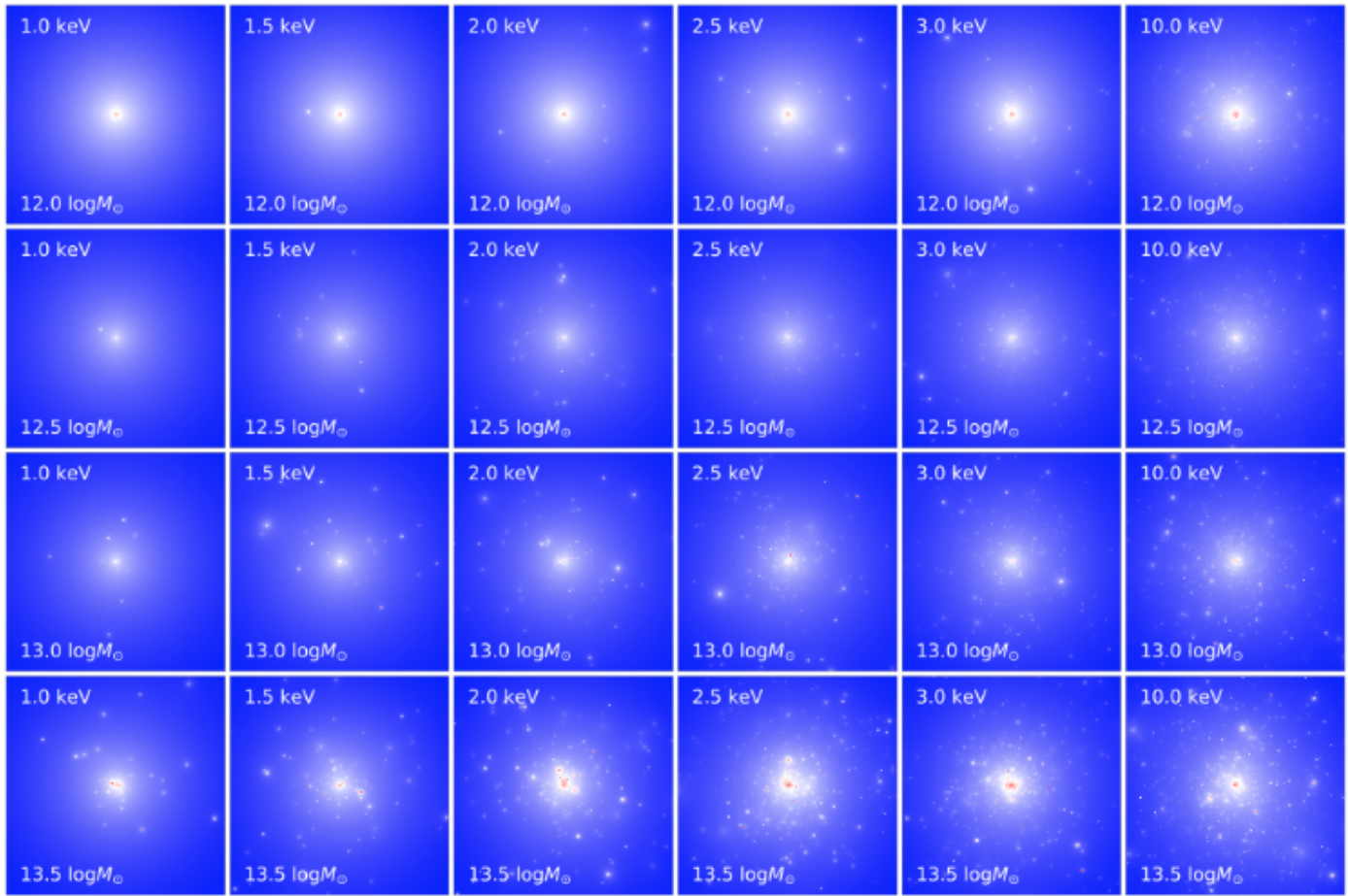
- i. Ellipsoidal power law mass distribution
- ii. SIS profile on the visible substructure
- iii. External shear
- iv. Shapelet potential perturbations (the scale Einstein radius). 21 shapelet parameters ($n_{\max} = 5$) \rightarrow 0.4'' resolution.
- v. Source: shapelets $n_{\max} = 50$, scale, = 0.18'' at quasar, & adaptive shapelets

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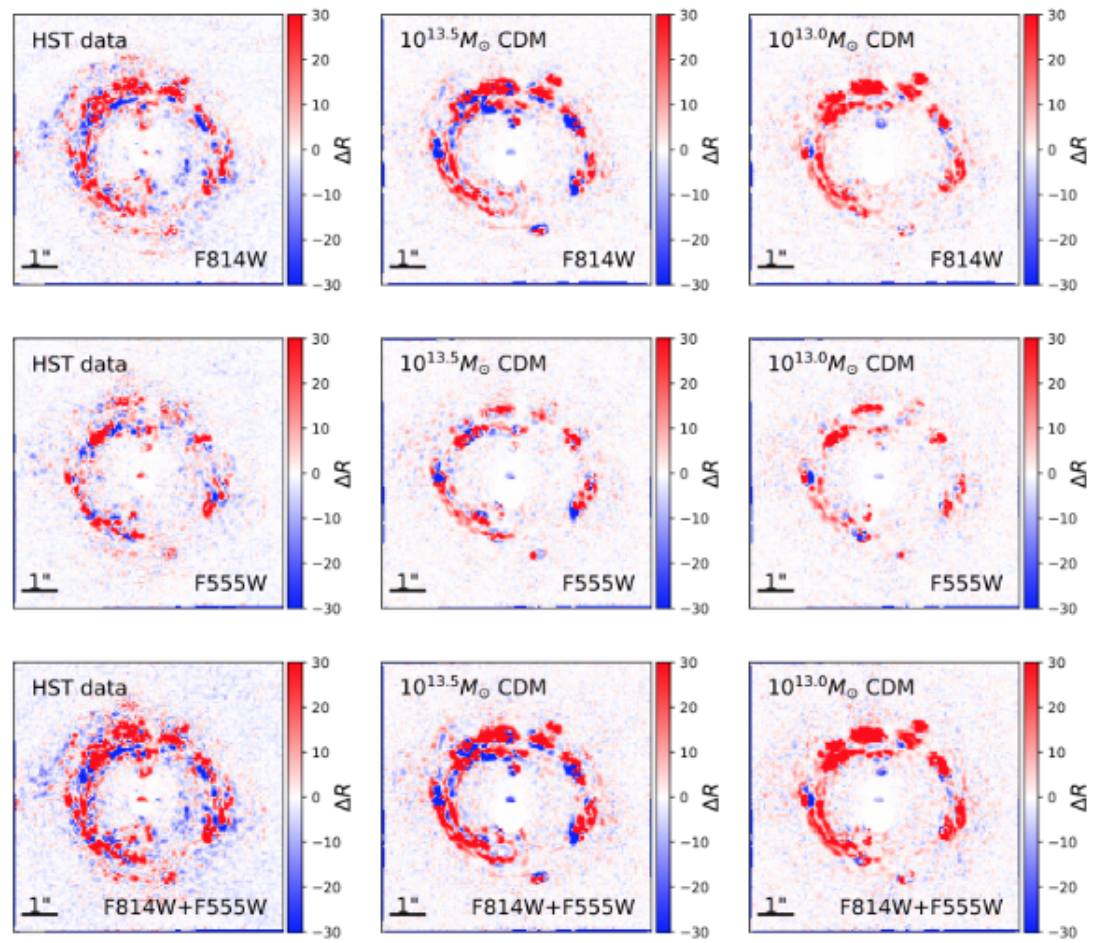
Forward Modelling

- Power spectrum (Viel, et al 2005)
- Merger tree (Parkinson et al 2008, Benson et al 2013, Barkana et al 2001)
- Disruption and tidal stripping (Jiang et al 2016, van den Bosch et al 2005, Giocoli et al 2008, Boylan-Kolchin et al 2008, Zentner et al 2005, Penarrubia et al 2008, Penarrubia et al 2010)
- Mock SL image generation:
 - Large scale features same as data
 - small scale features from the mocks
 - Substructure sensitivity analysis on both mocks and data
 - Constraints through Approximate Bayesian Computing (ABC)

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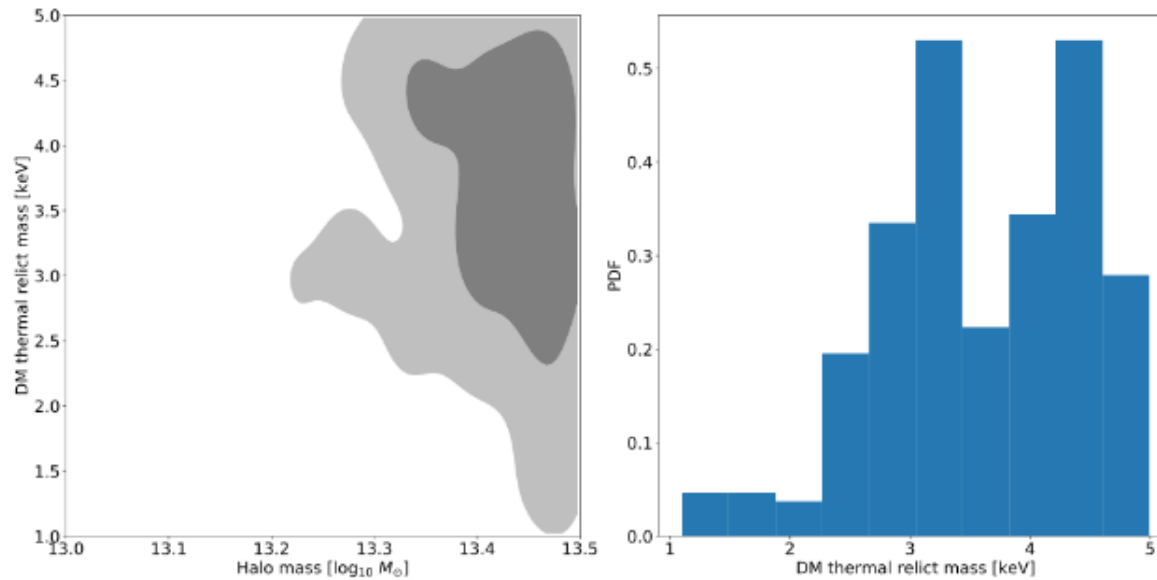


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Thermal relic mass limit due to strong lensing of RXJ1131-1231



Thermal relic mass > 2 KeV

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