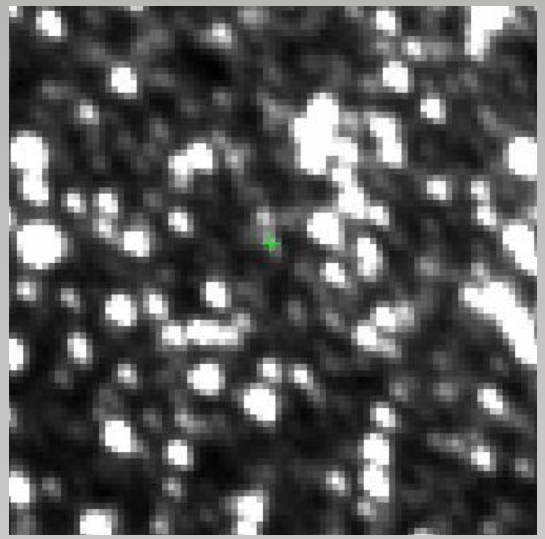
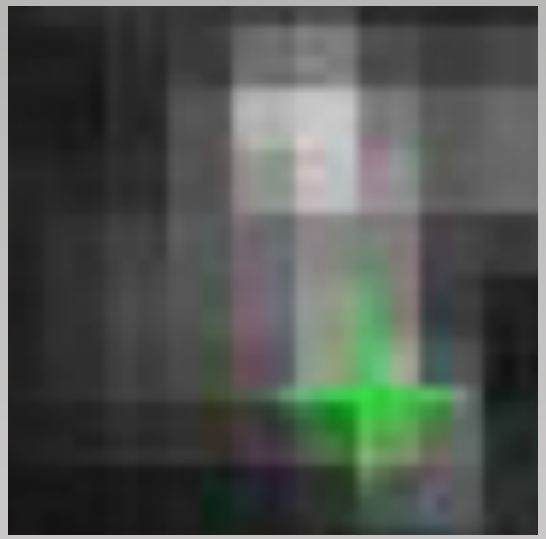
Using AO Follow-up to Characterize Microlensing Exoplanets





Primary Collaborators

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David Bennett (Goddard)

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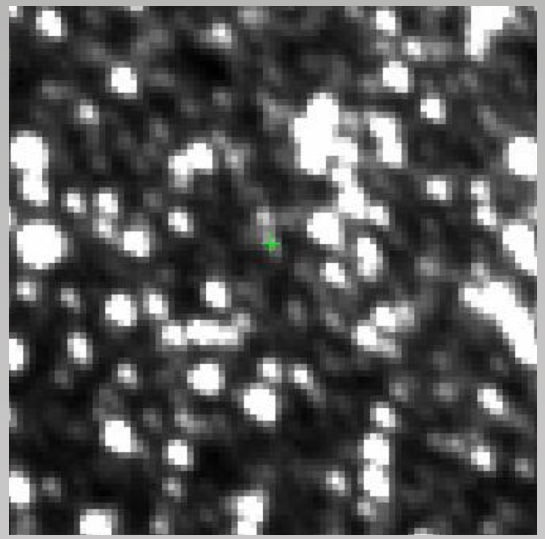

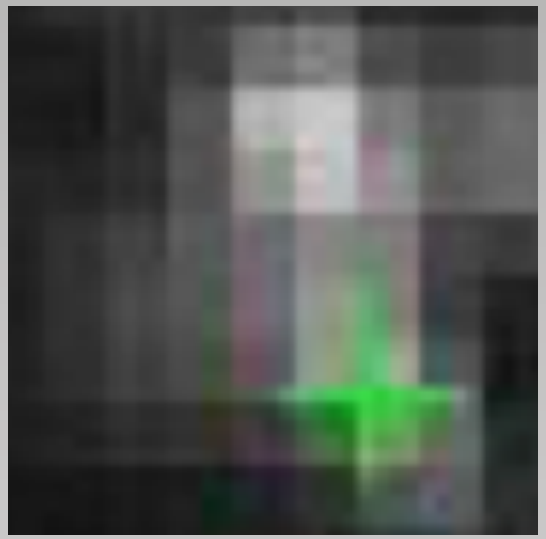

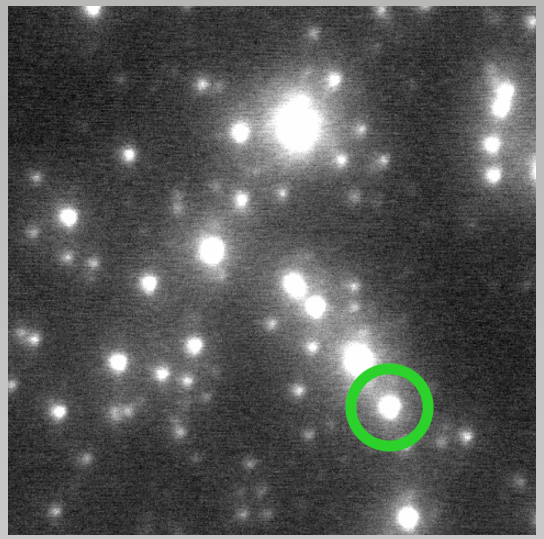

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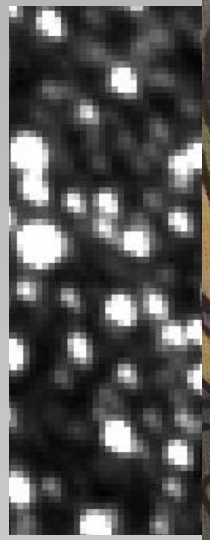
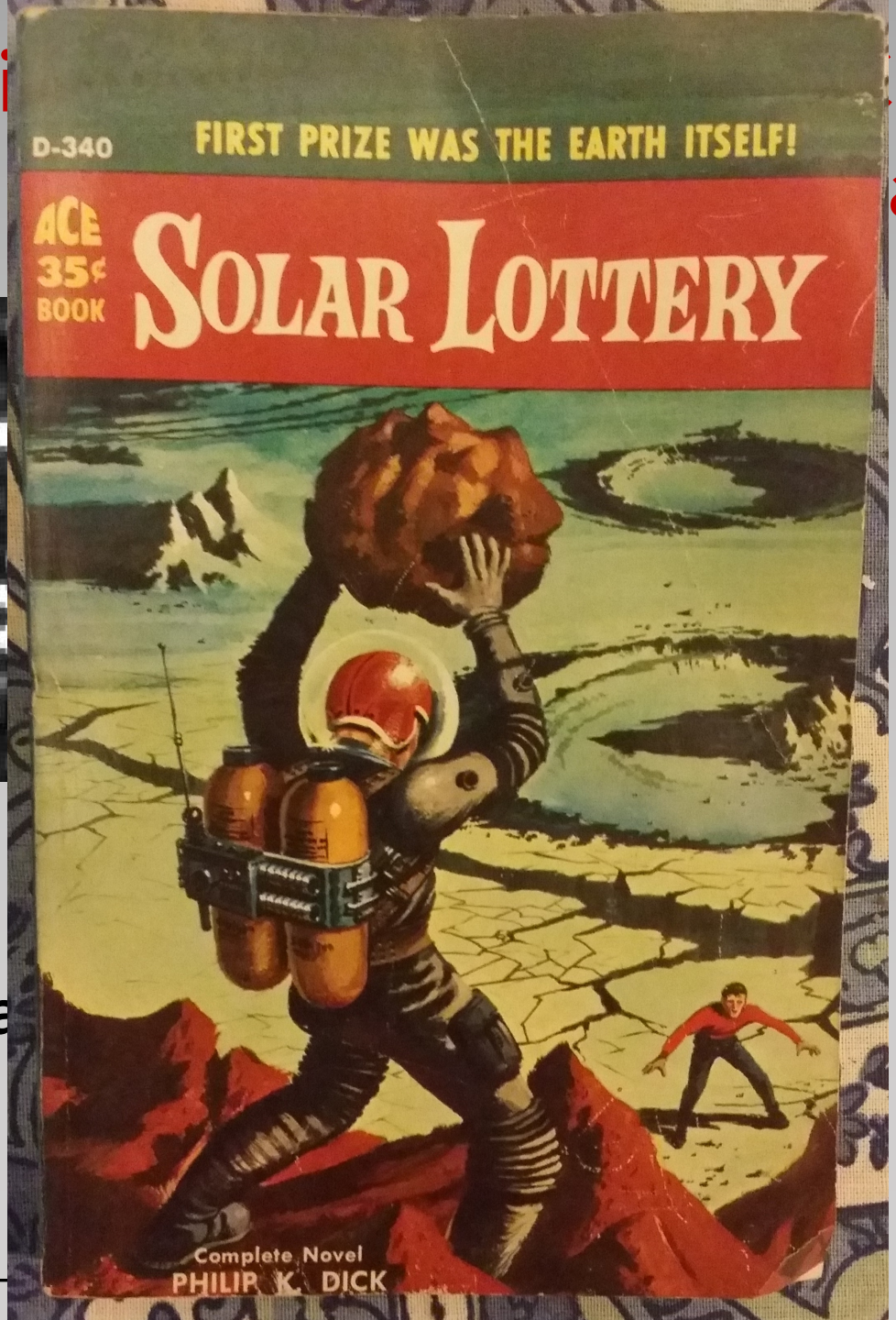
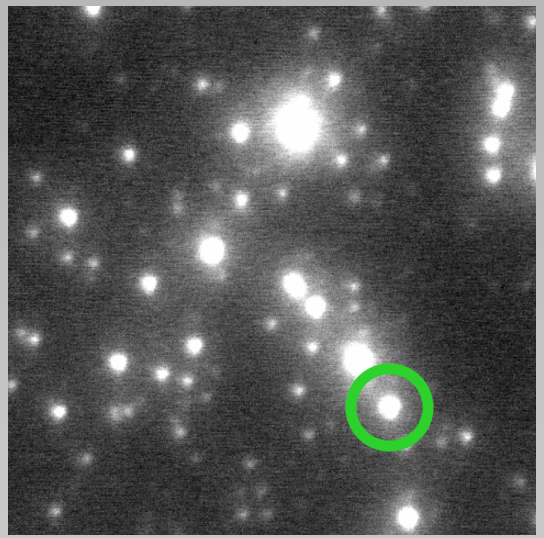
Usi haracterize anets







Colla

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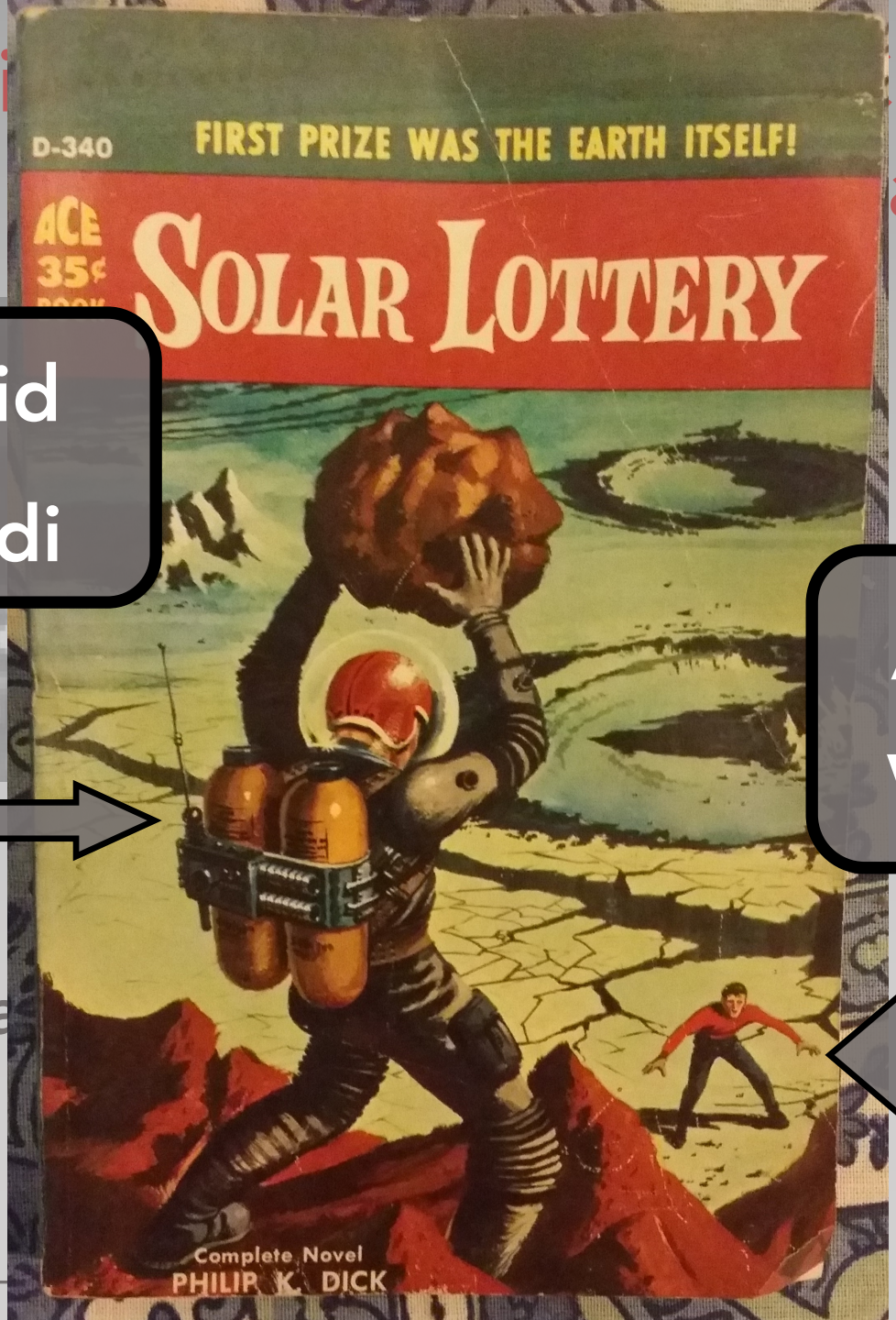

David Ciardi

Anyone who wants coffee

Colla

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Microlensing Exoplanet Properties:
Mass and Distance

(1) Einstein Radius:

- finite-source effects (ρ)
- astrometry

$$M_l = \frac{(\theta_E)^2}{\kappa \pi_{rel}}$$

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Know Thy Star…

Know Thy Planet!

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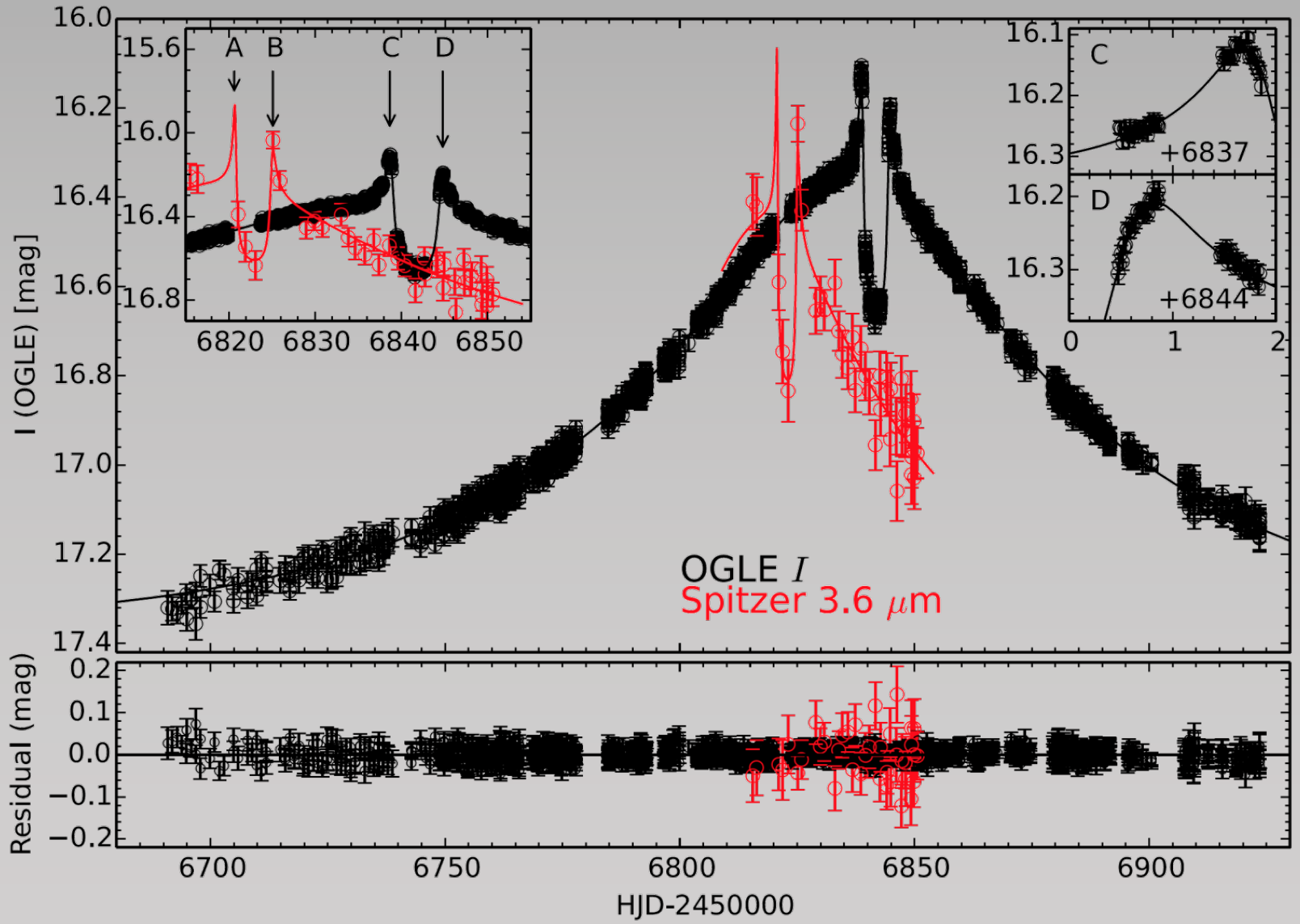
OB140124: *Spitzer* Target



Udalski+ (2015) ApJ, 799, 237

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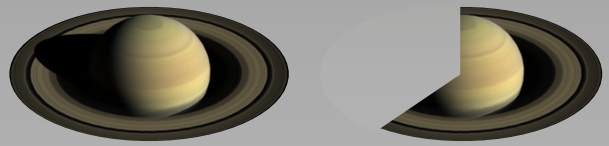

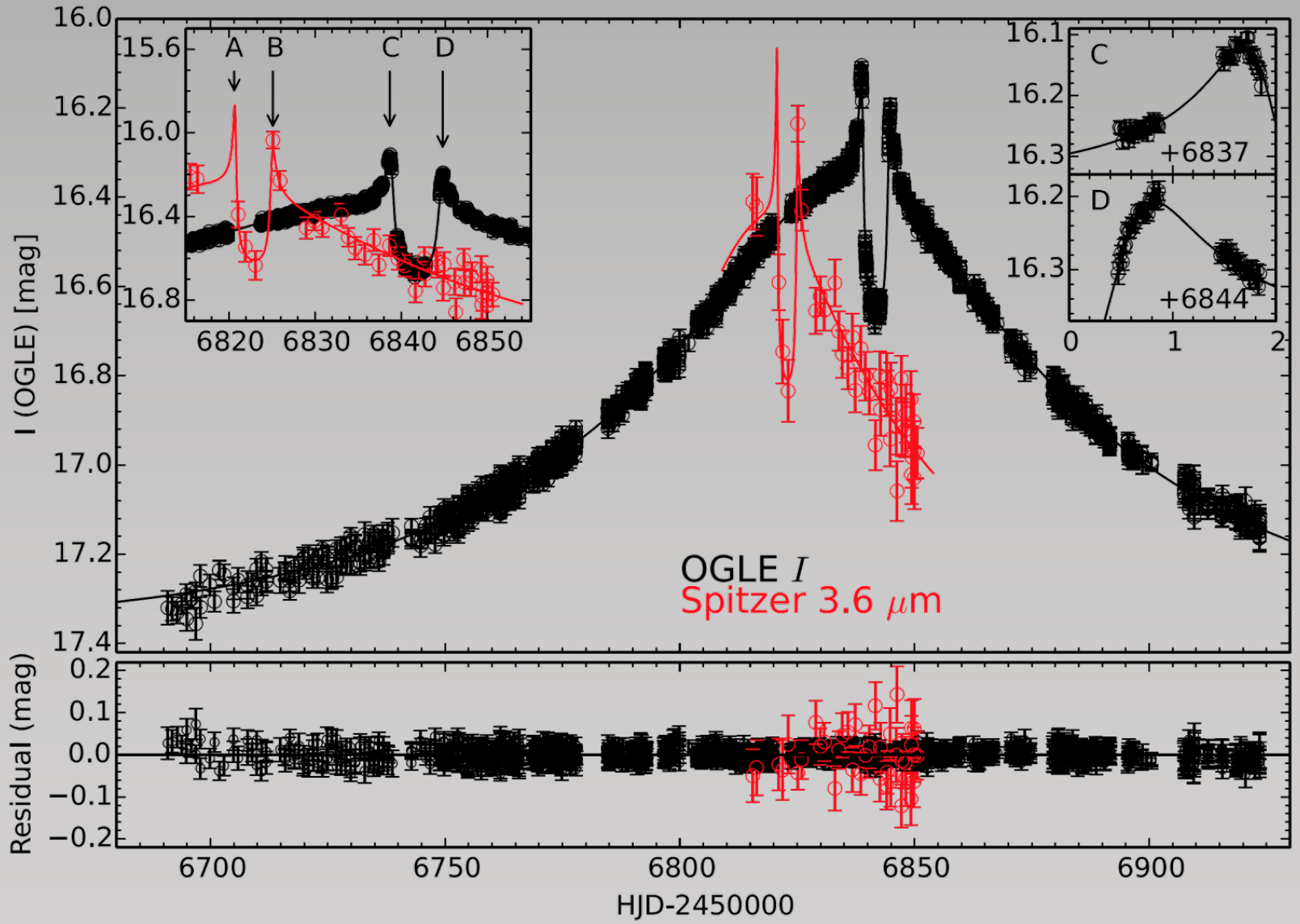

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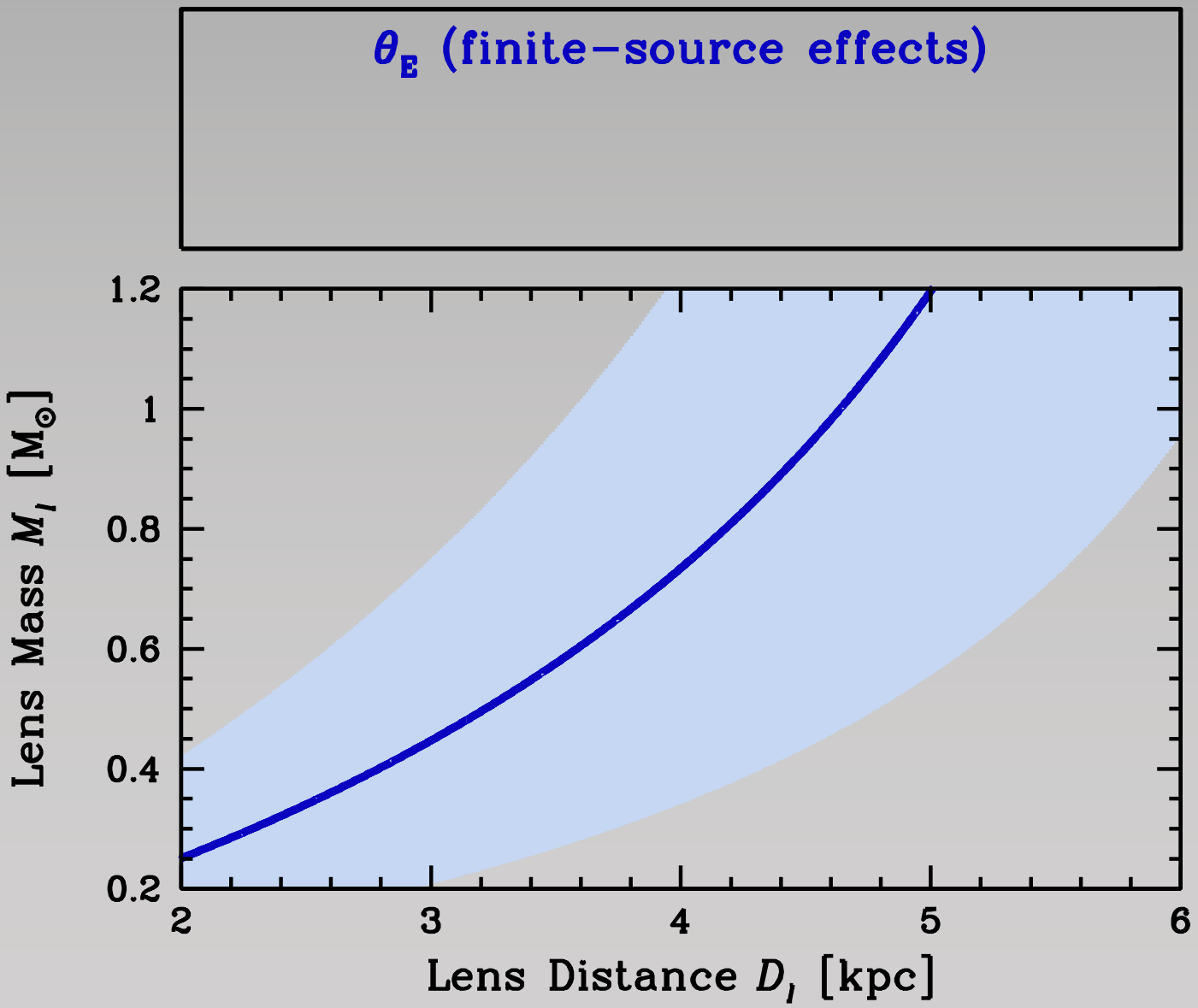
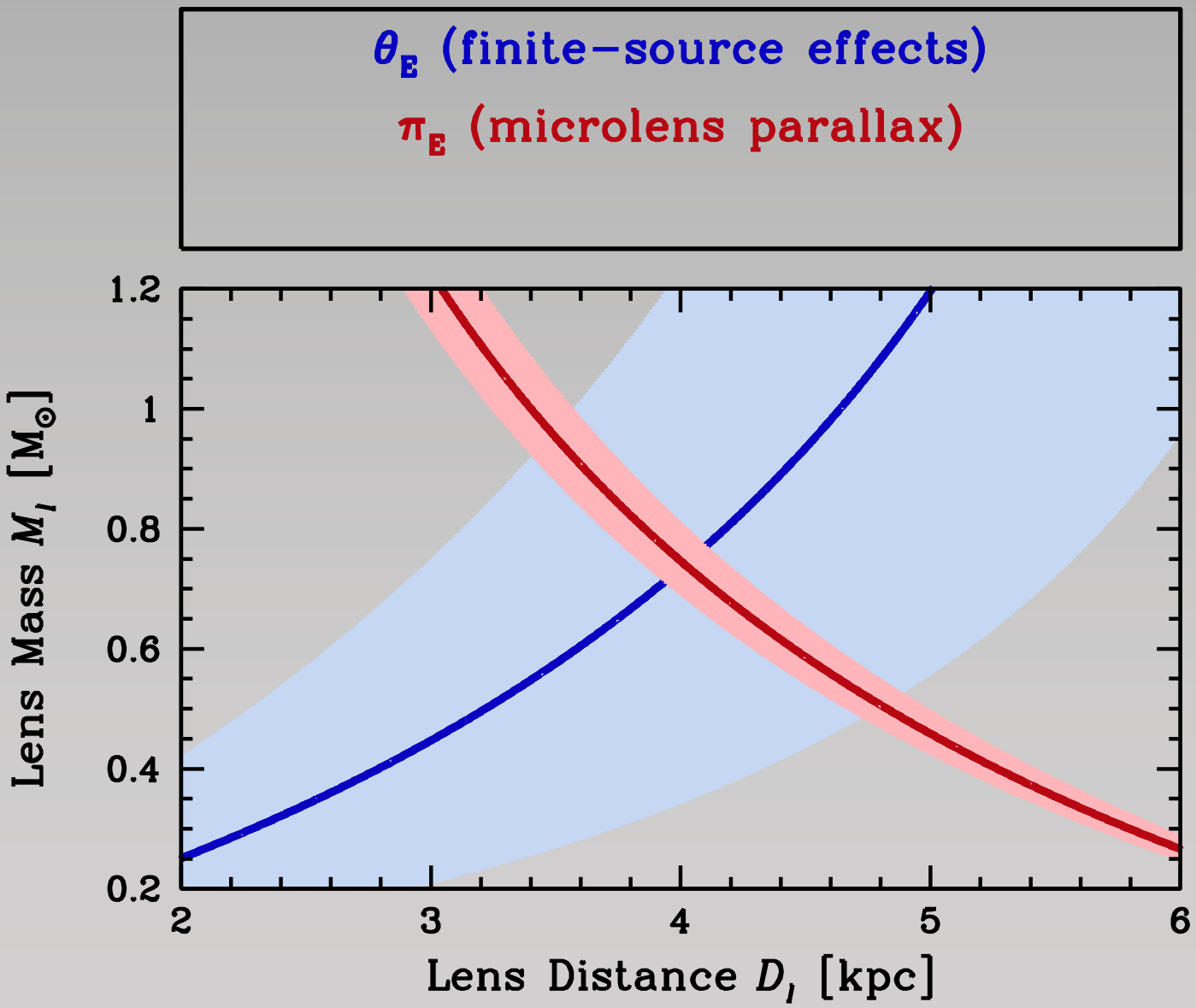
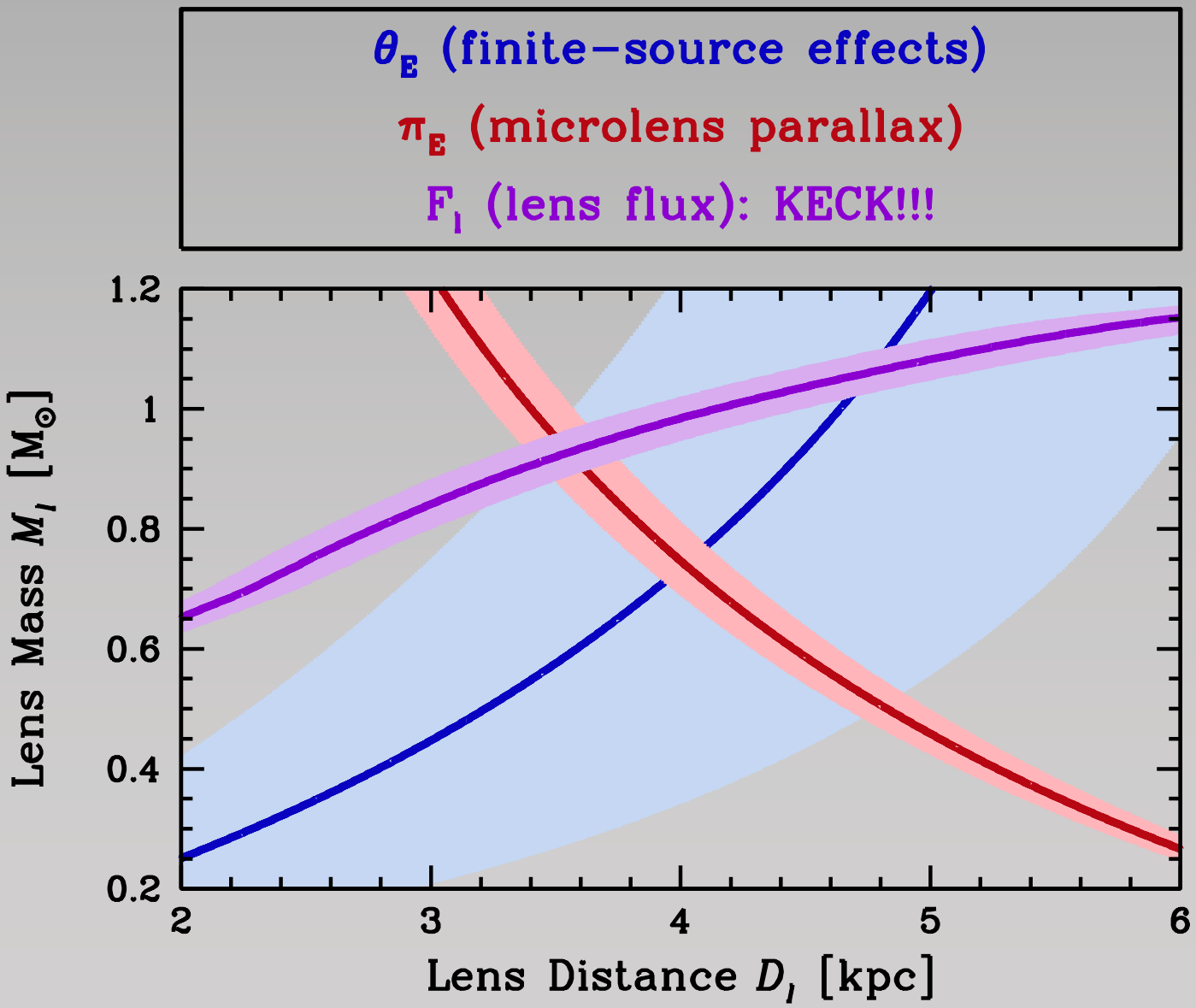
OB140124: Mass-distance Relations (I)



OB140124: Mass-distance Relations (II)



OB140124: Mass-distance Relations (III)



Beaulieu+ **[incl. Henderson]** arXiv:1709.00806

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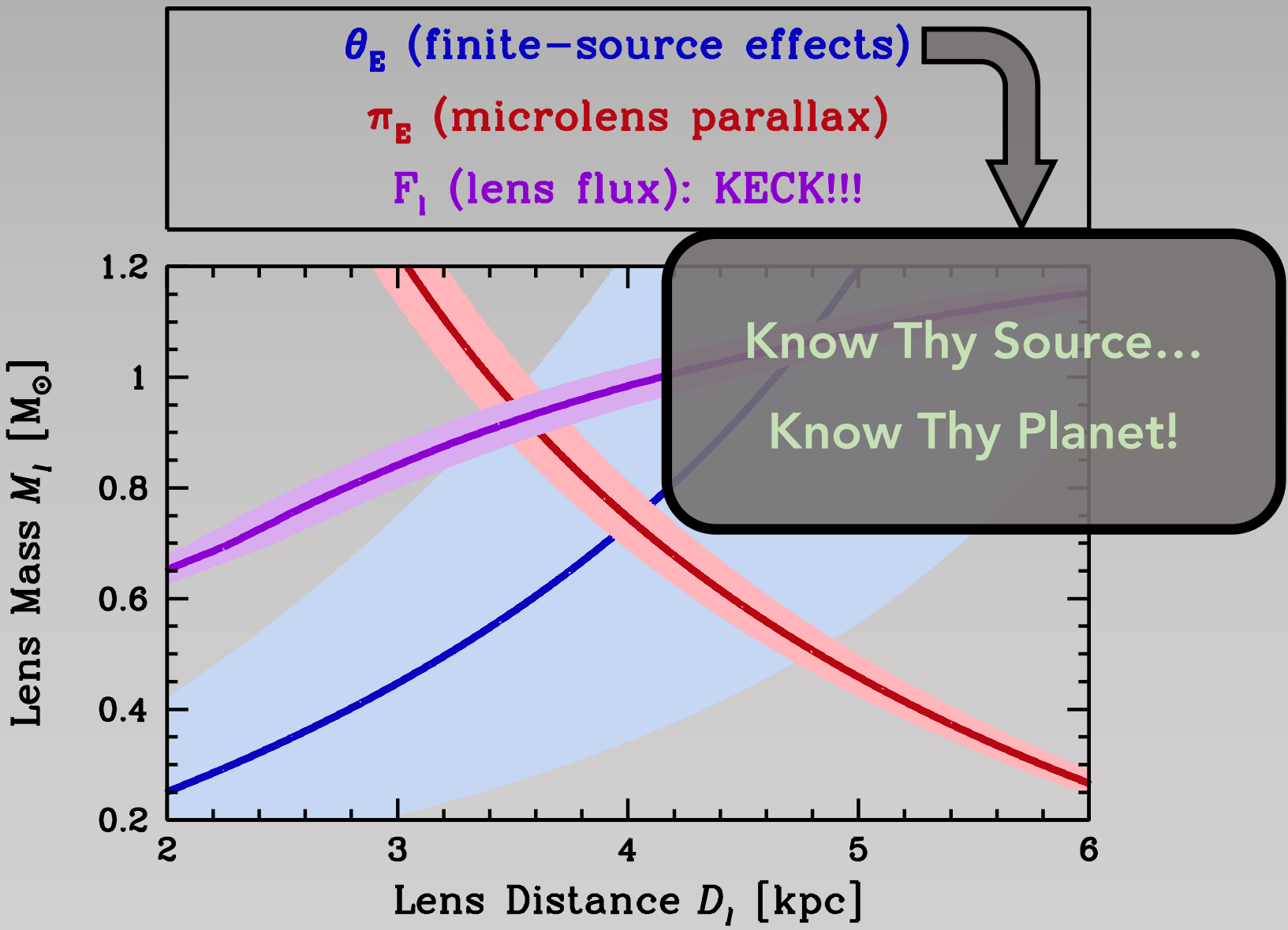

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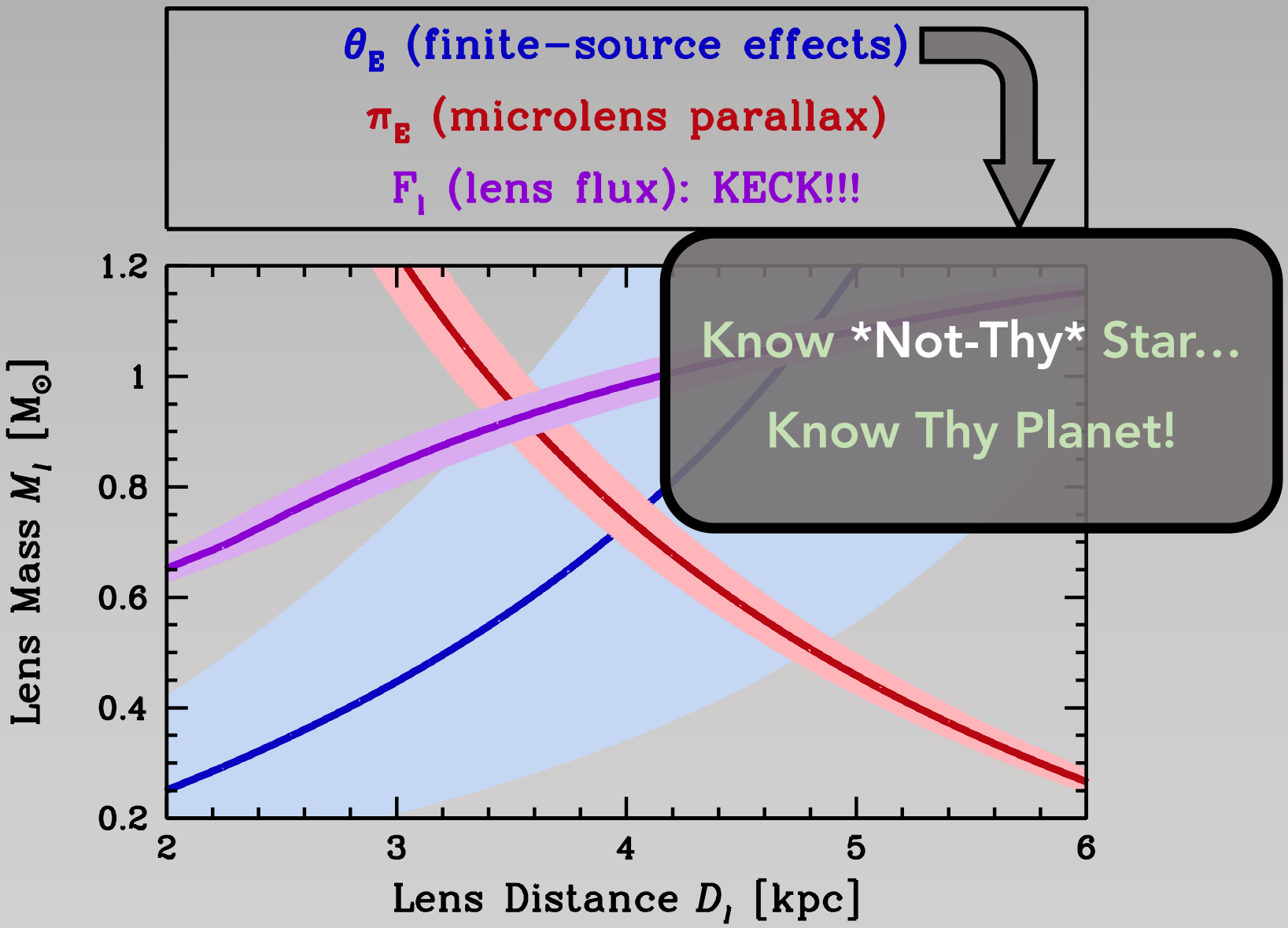

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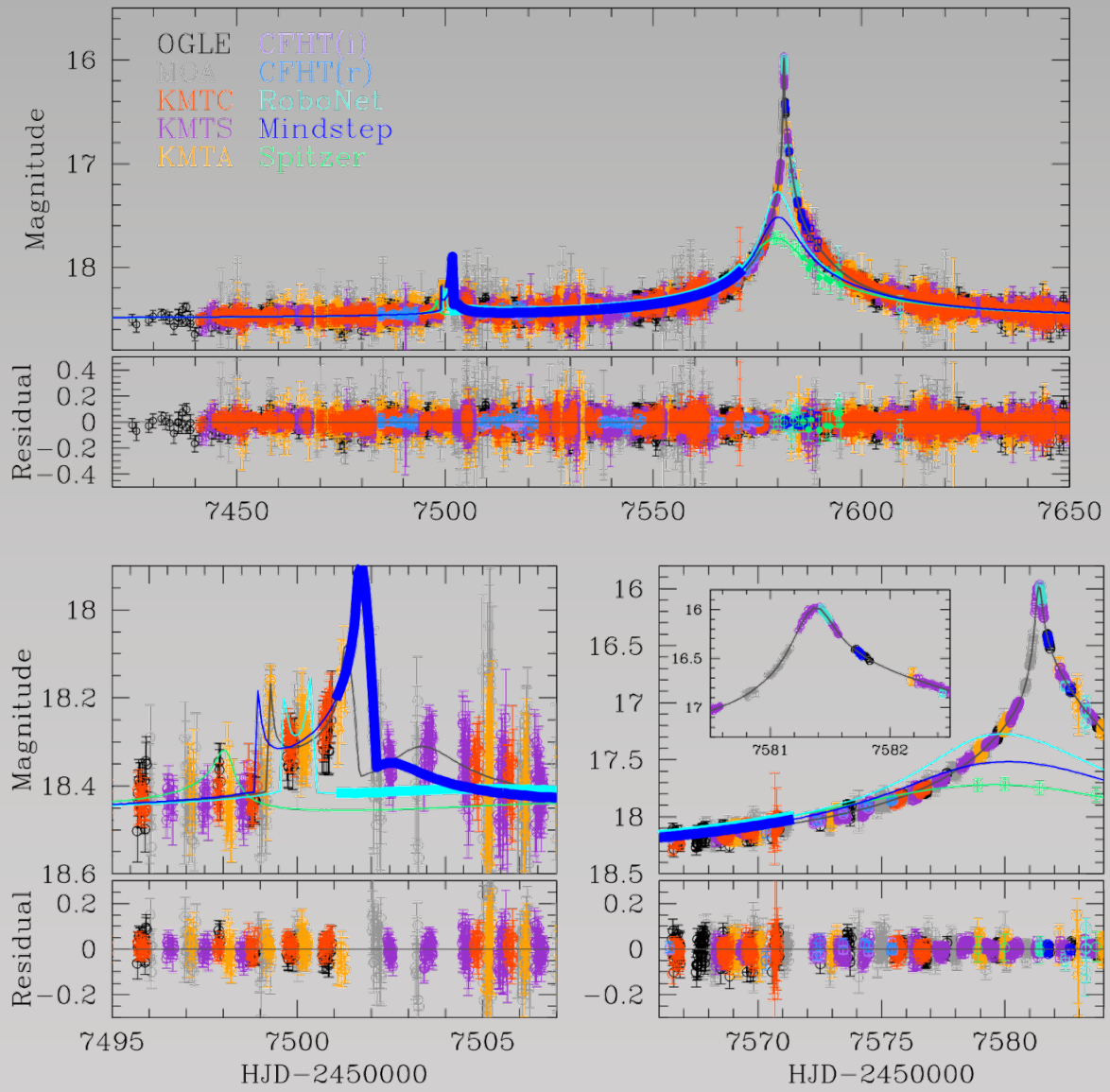
OB161190: *Spitzer* and *K2C9*



Ryu+ **[incl. Henderson]**, in prep.

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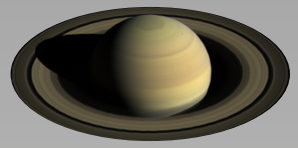
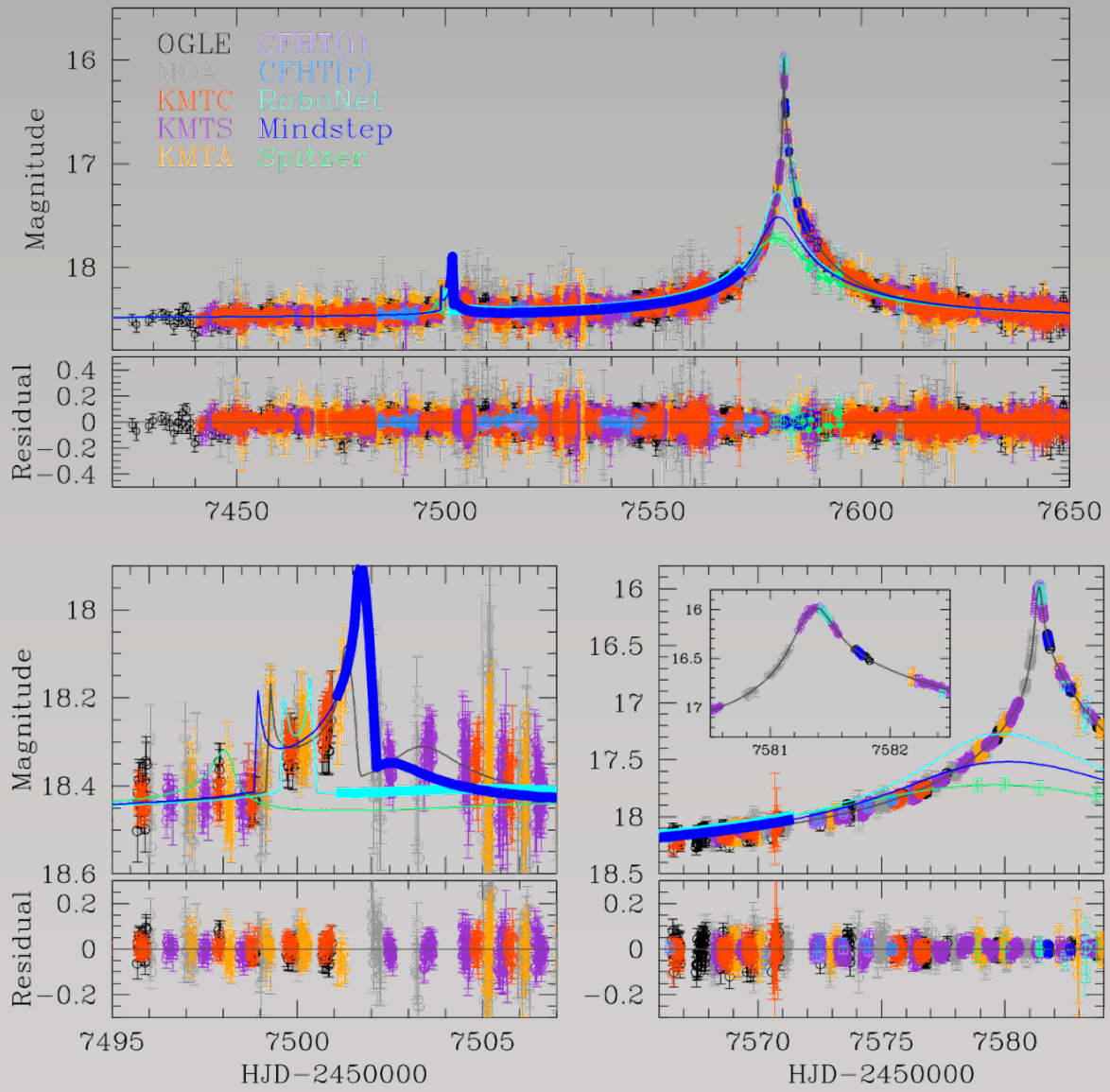


x ~45



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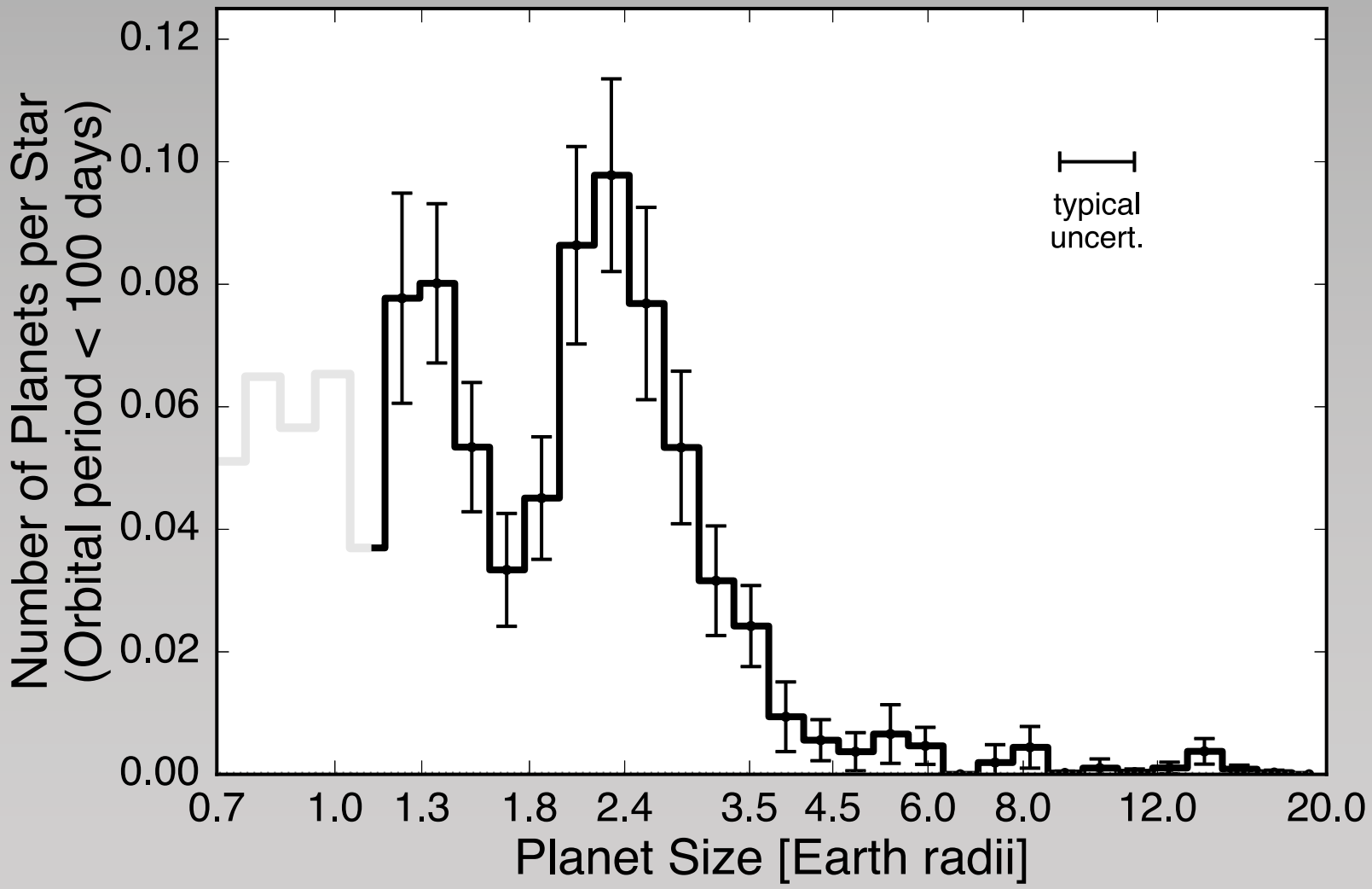
FULTON GAP



Fulton+ (2017) AJ, 154, 109: Fig 7a

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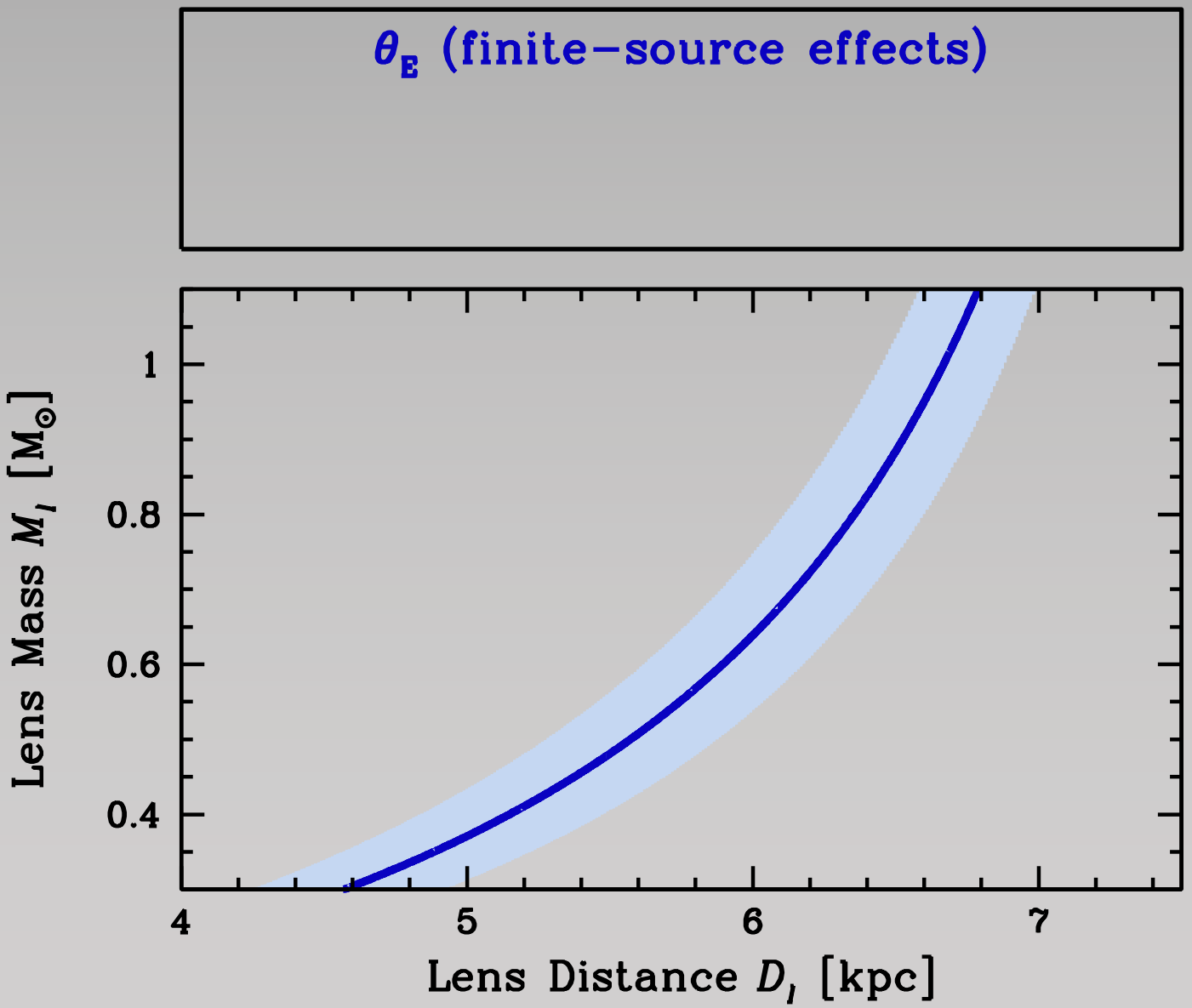

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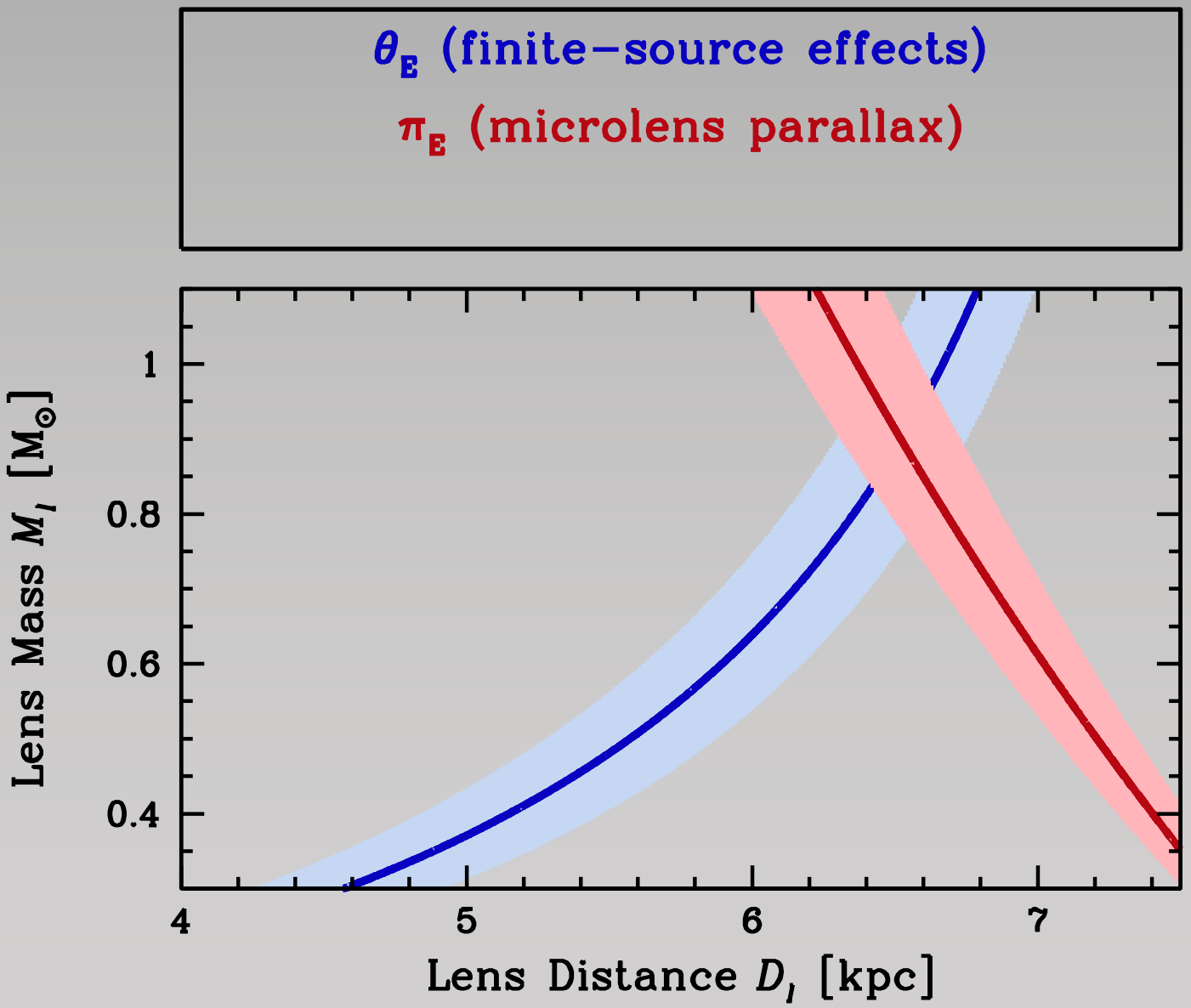

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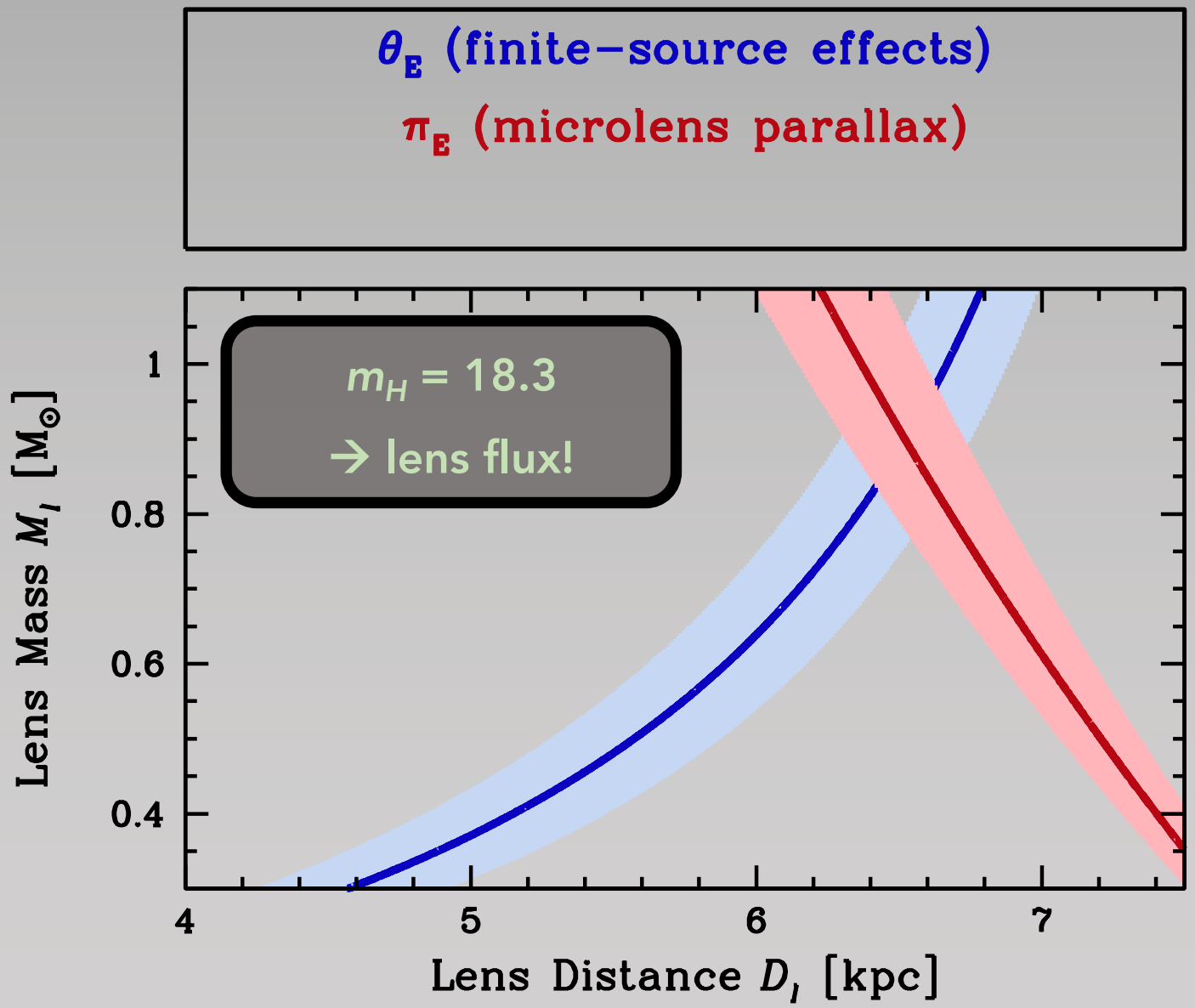

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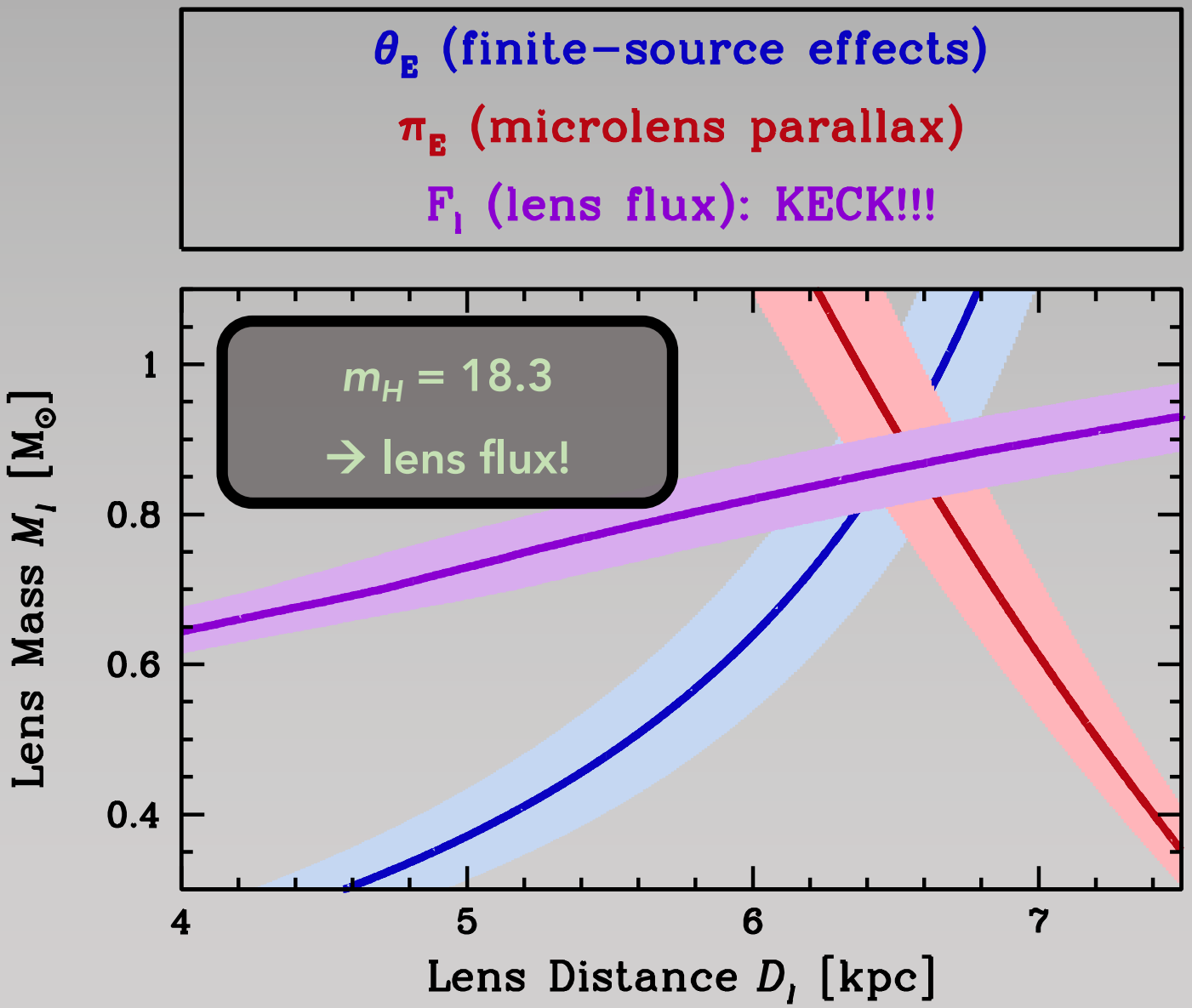

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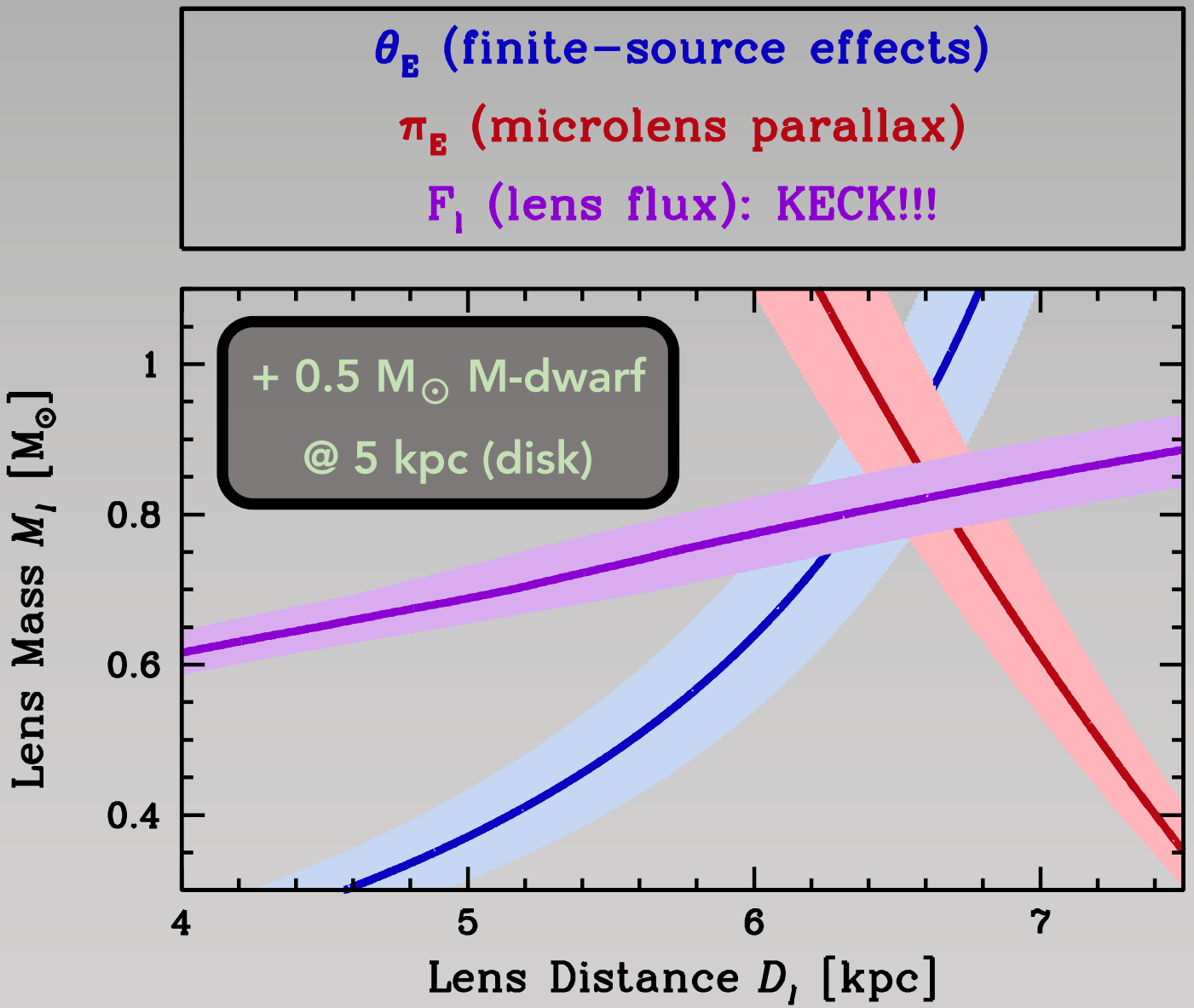

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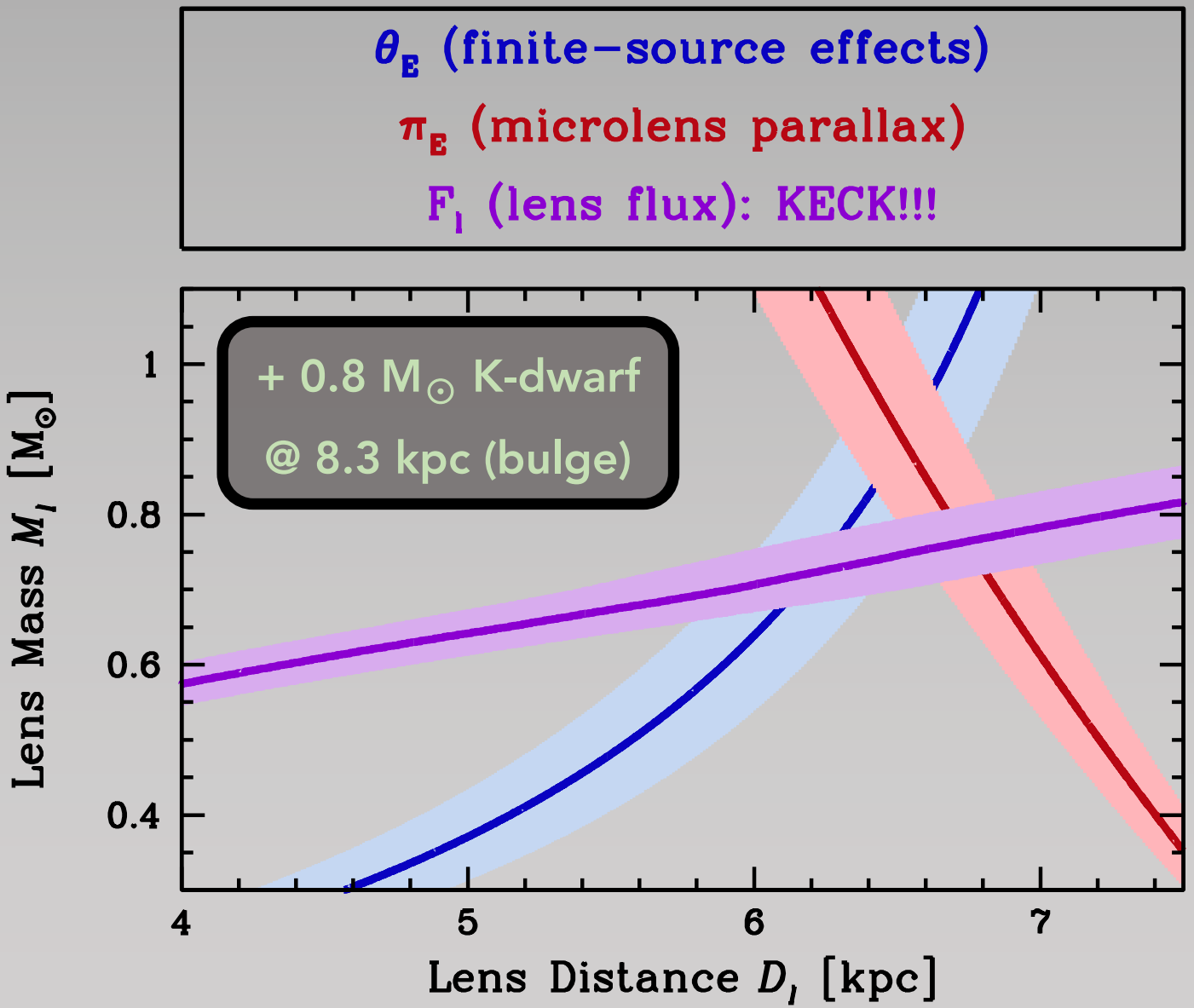

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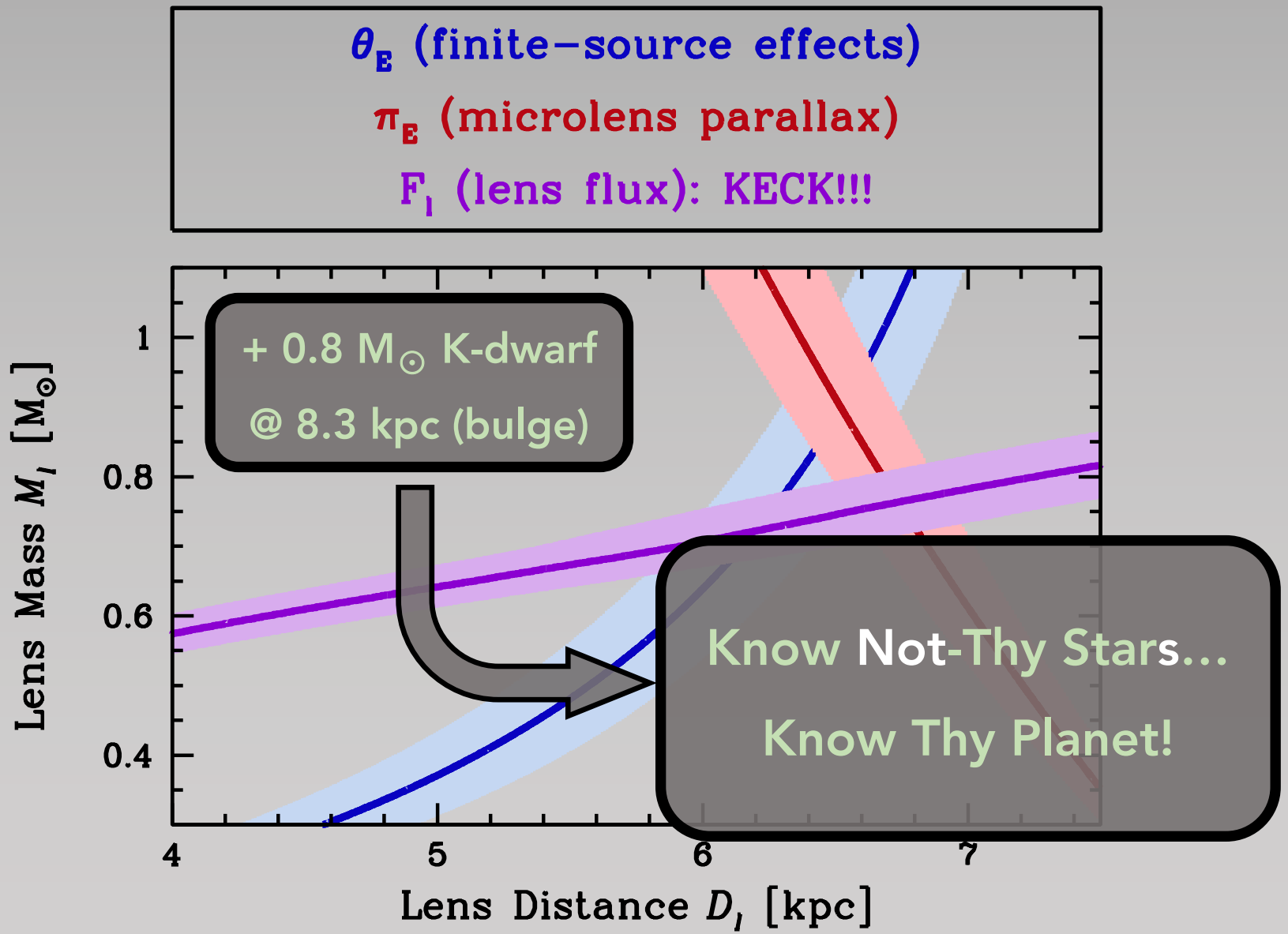

Microlensing Follow-up with Keck: Immediate Science *and* *WFIRST* Prep!

…but:

- Isochrones versus empirical mass-luminosity relations
- Stellar age is generally unknown
- Direct measure of NIR extinction toward lens
- Systematic uncertainty in absolute photometric calibration
- Blend flux contribution from ambient stars
- Blend flux contribution from companion(s) to lens or source
- How to reconcile with θ_E and π_E methodologies?!?