

Cosmic Magnification with MSSS

David Bacon

ICG Portsmouth

with Matt Jarvis, Jean Claude Kubwimana, Ben Hoyle,
Prina Patel, Bob Nichol

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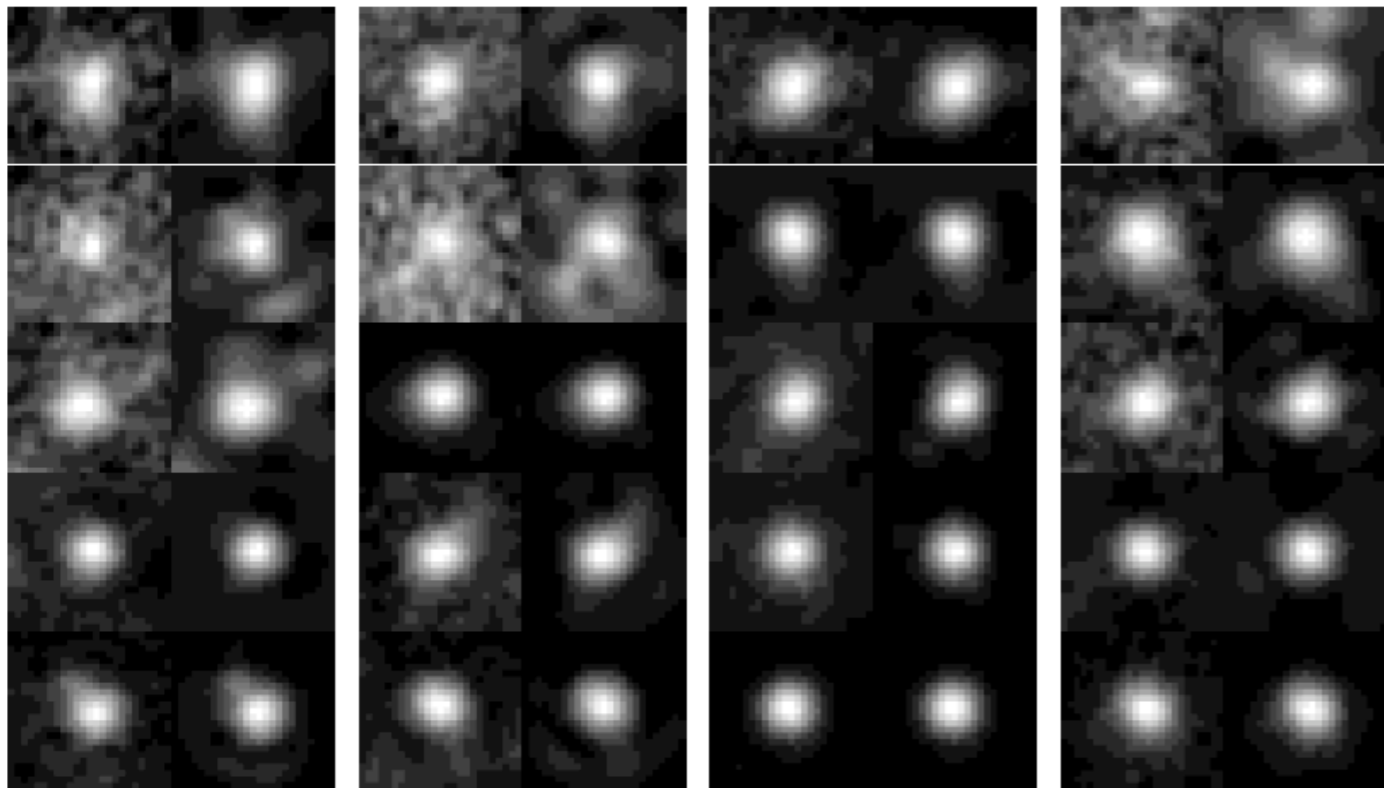
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Weak lensing in radio

- Shear with **Patel**, Beswick & Muxlow
(Merlin+VLA HDFN)

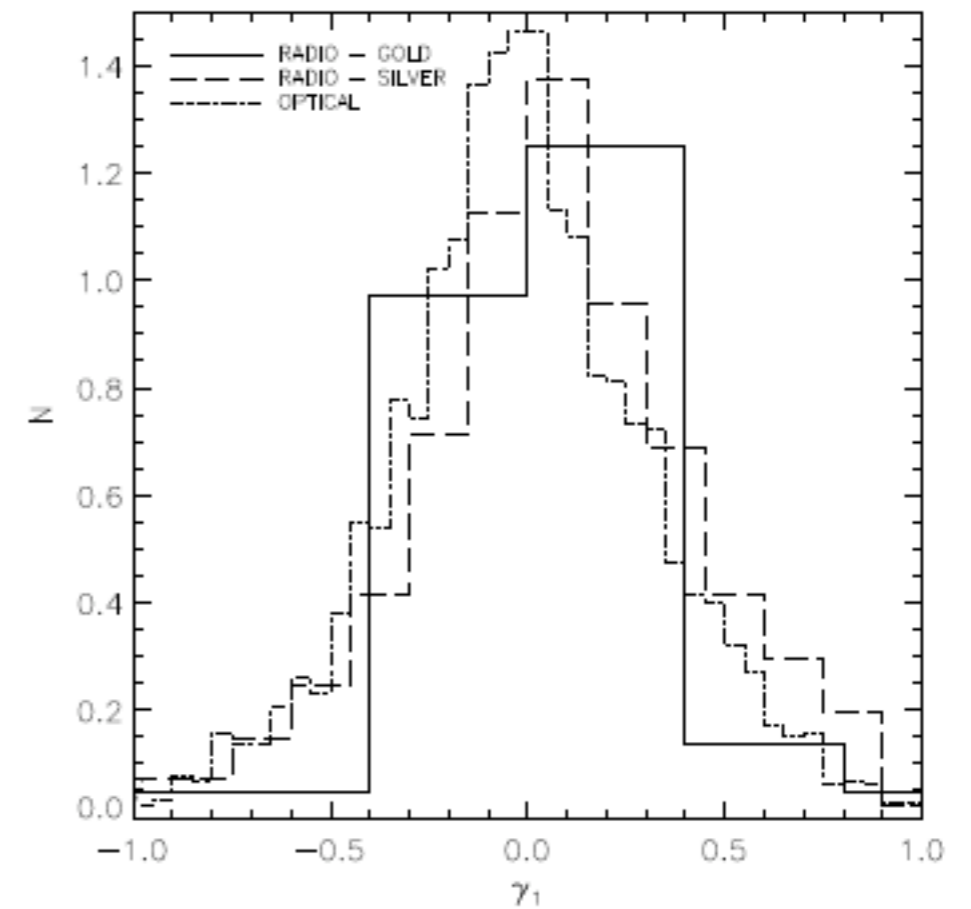
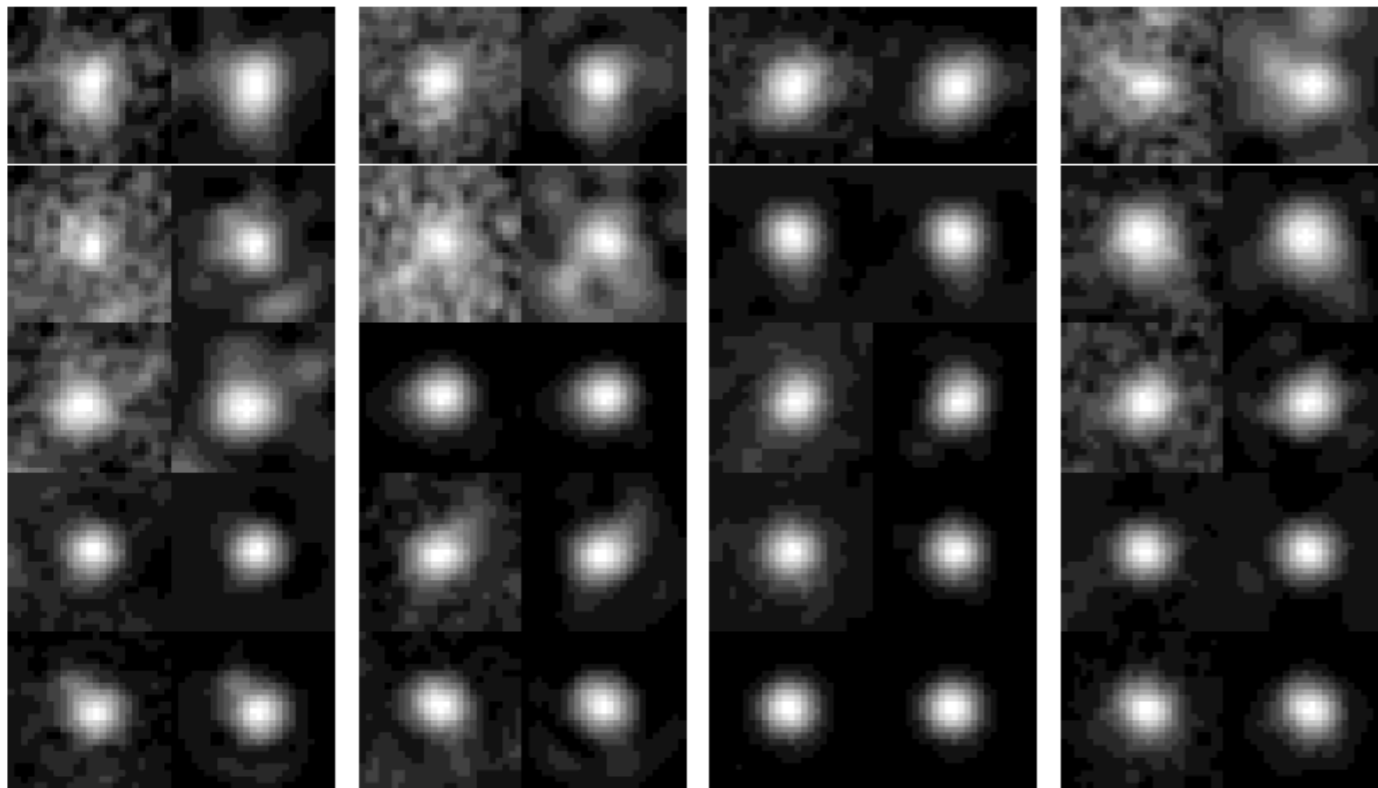
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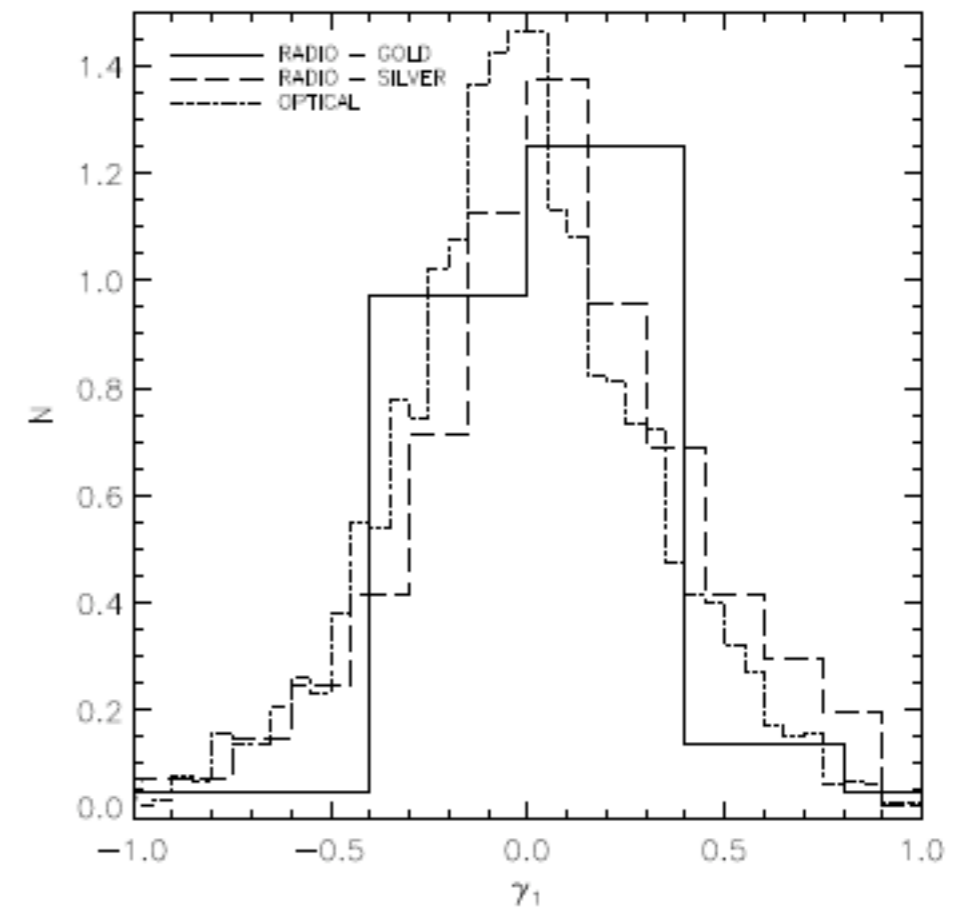
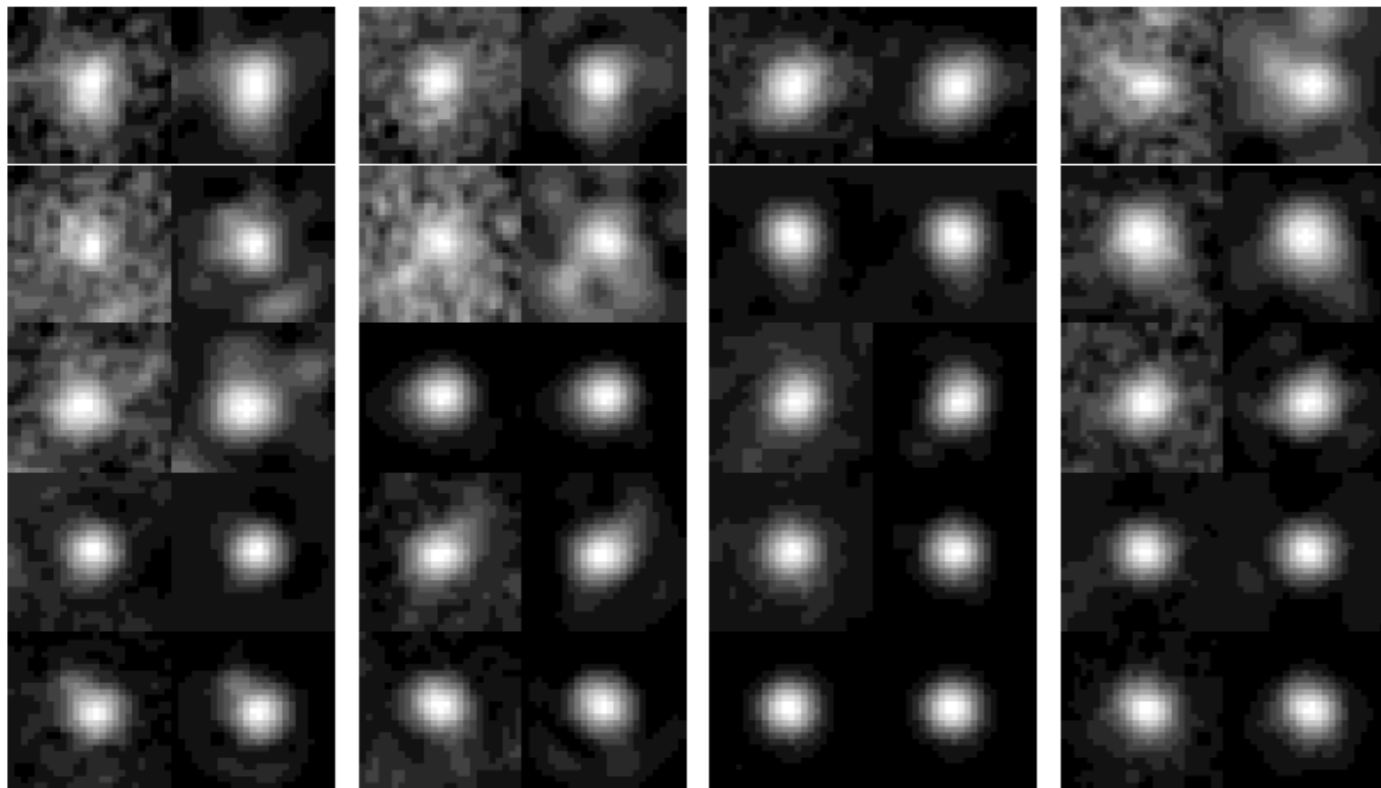
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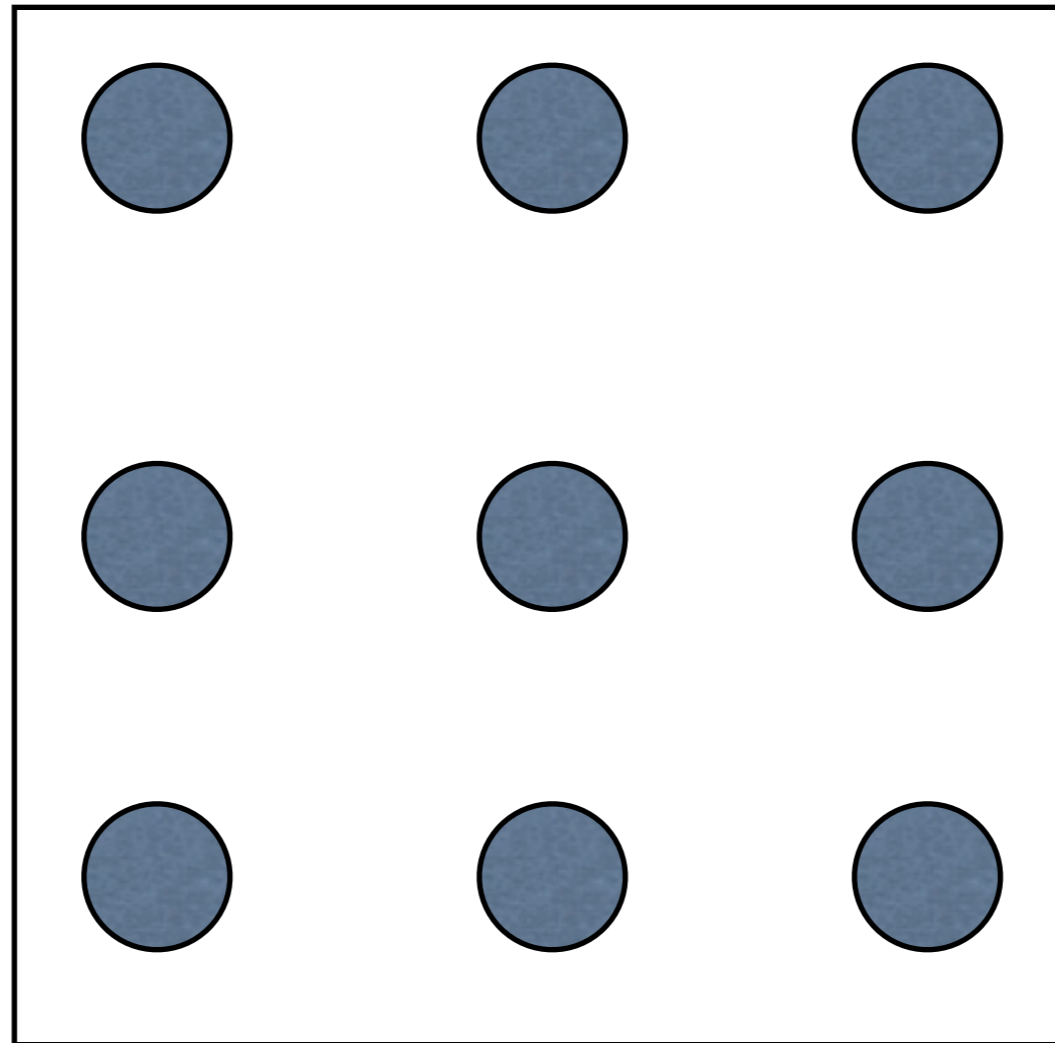
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This can eventually be attempted with E-LOFAR with **long baselines** - great way of finding out about the dark

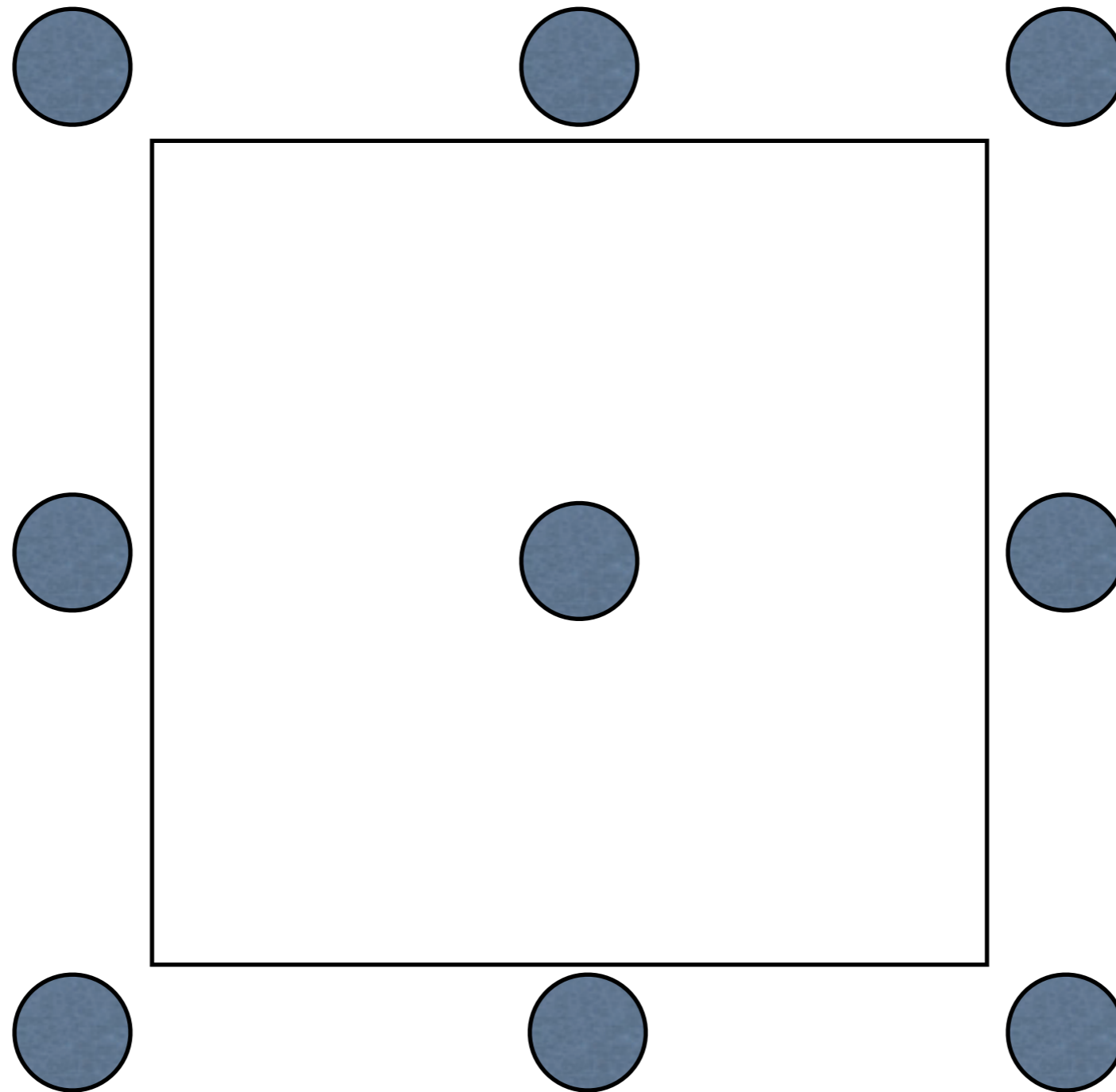
Cosmic Magnification:

Two competing effects



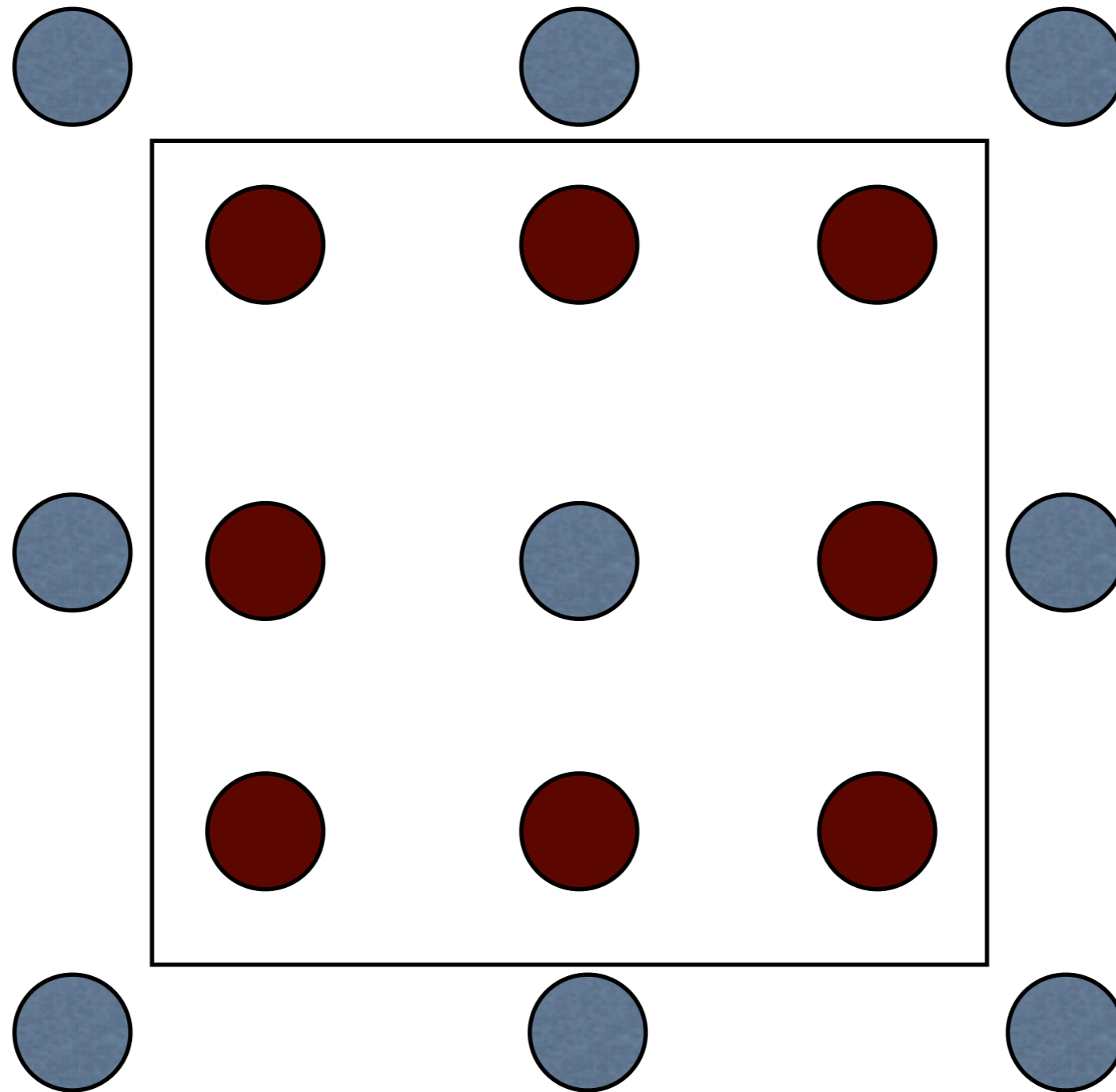
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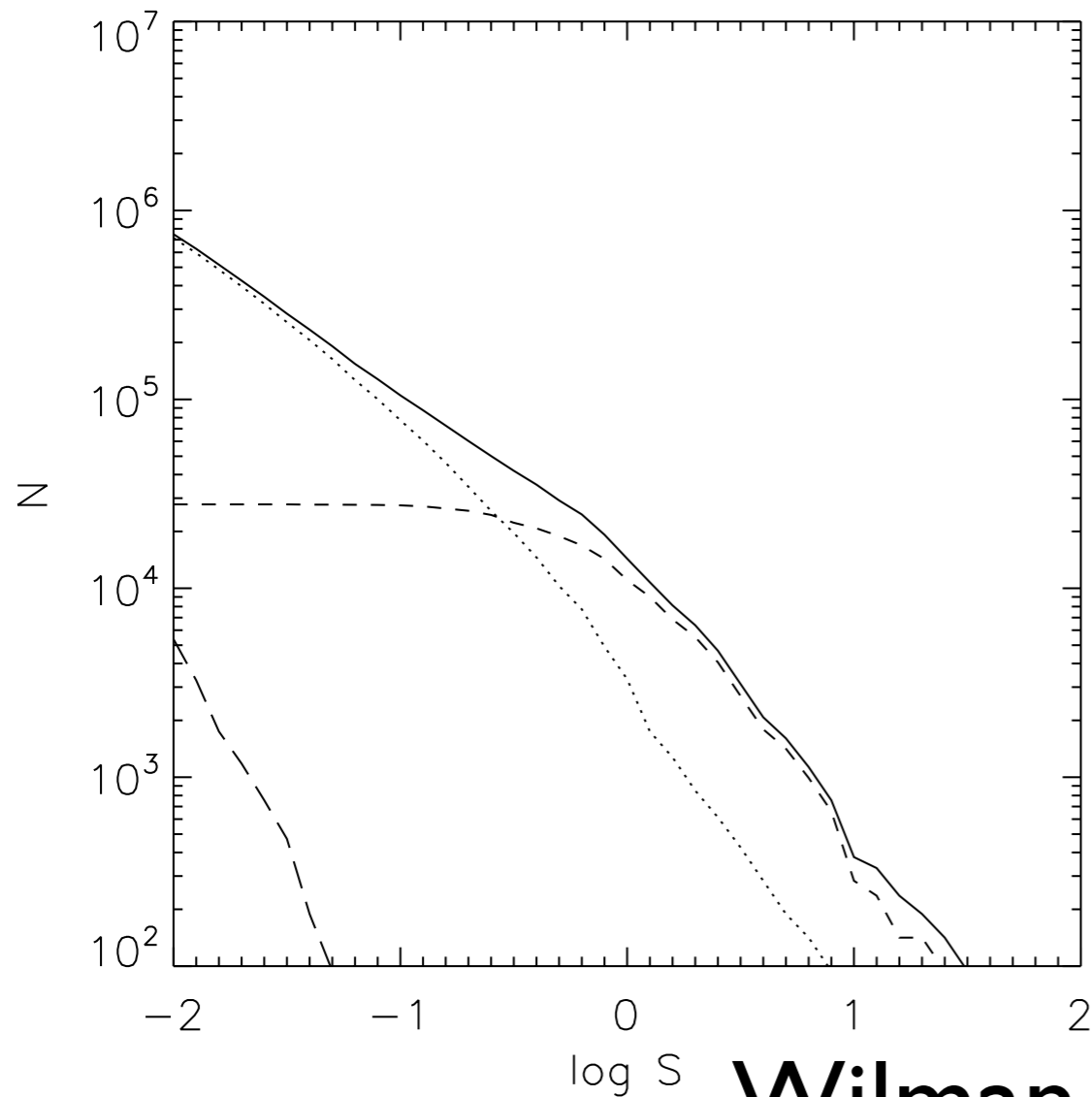


Cosmic Magnification:

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Expected $N(>S)$

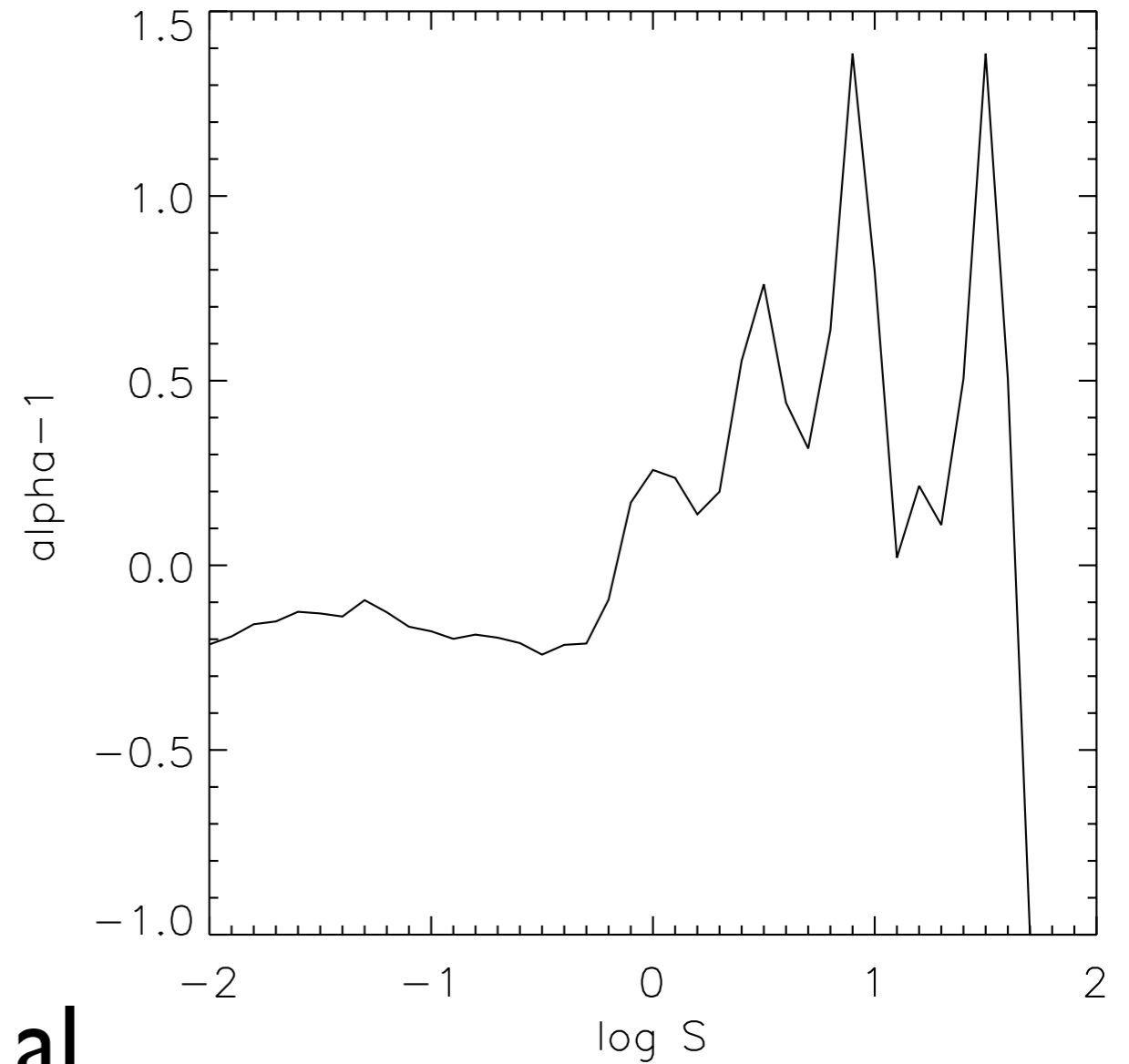
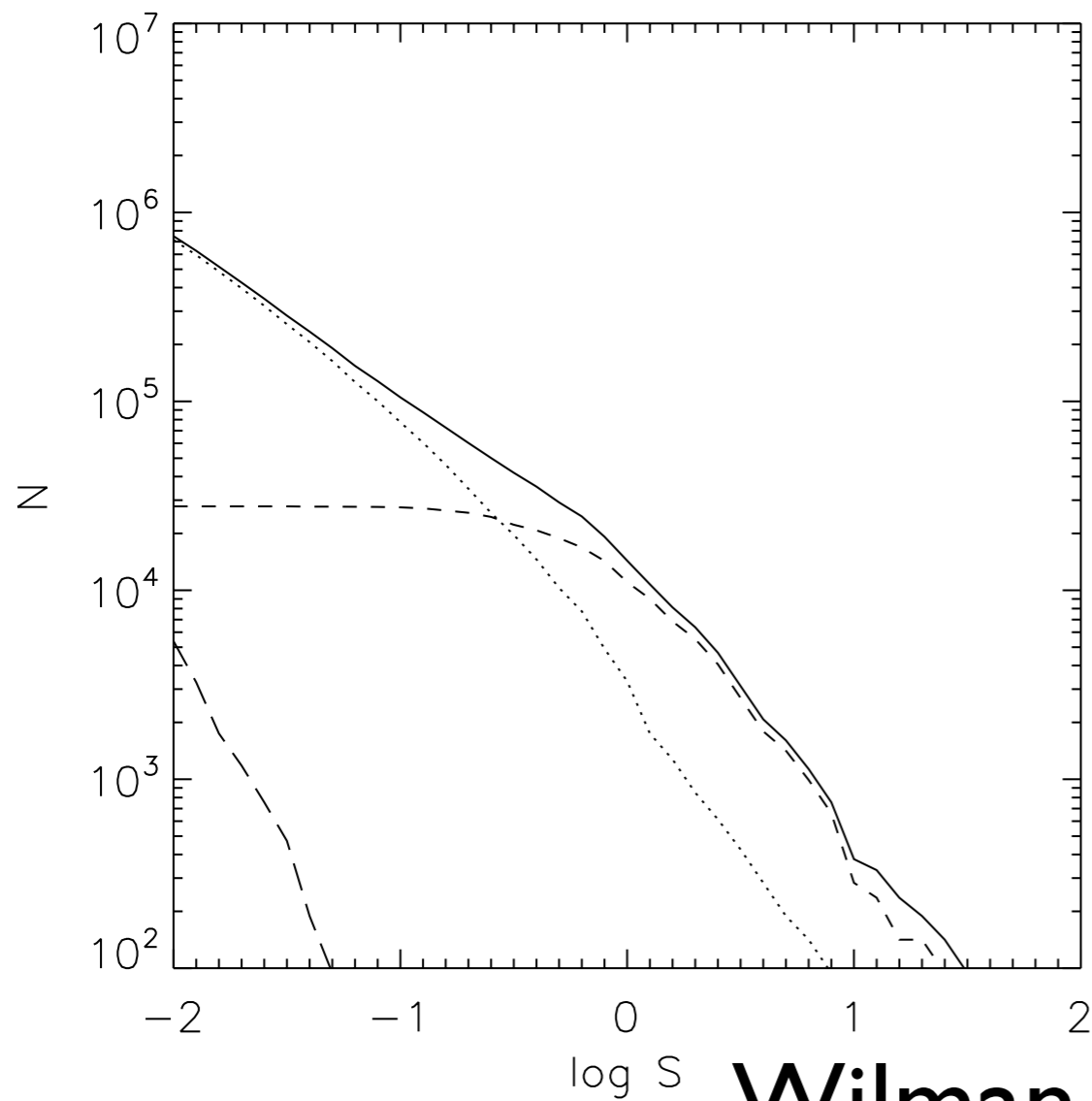


Wilman et al

SKADS S-Cubed, 150MHz

Selection being discussed; for simplicity here $z > 0.3$

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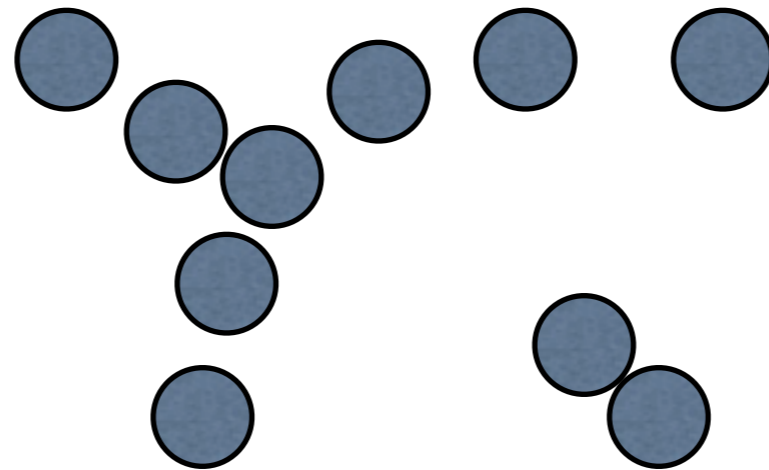


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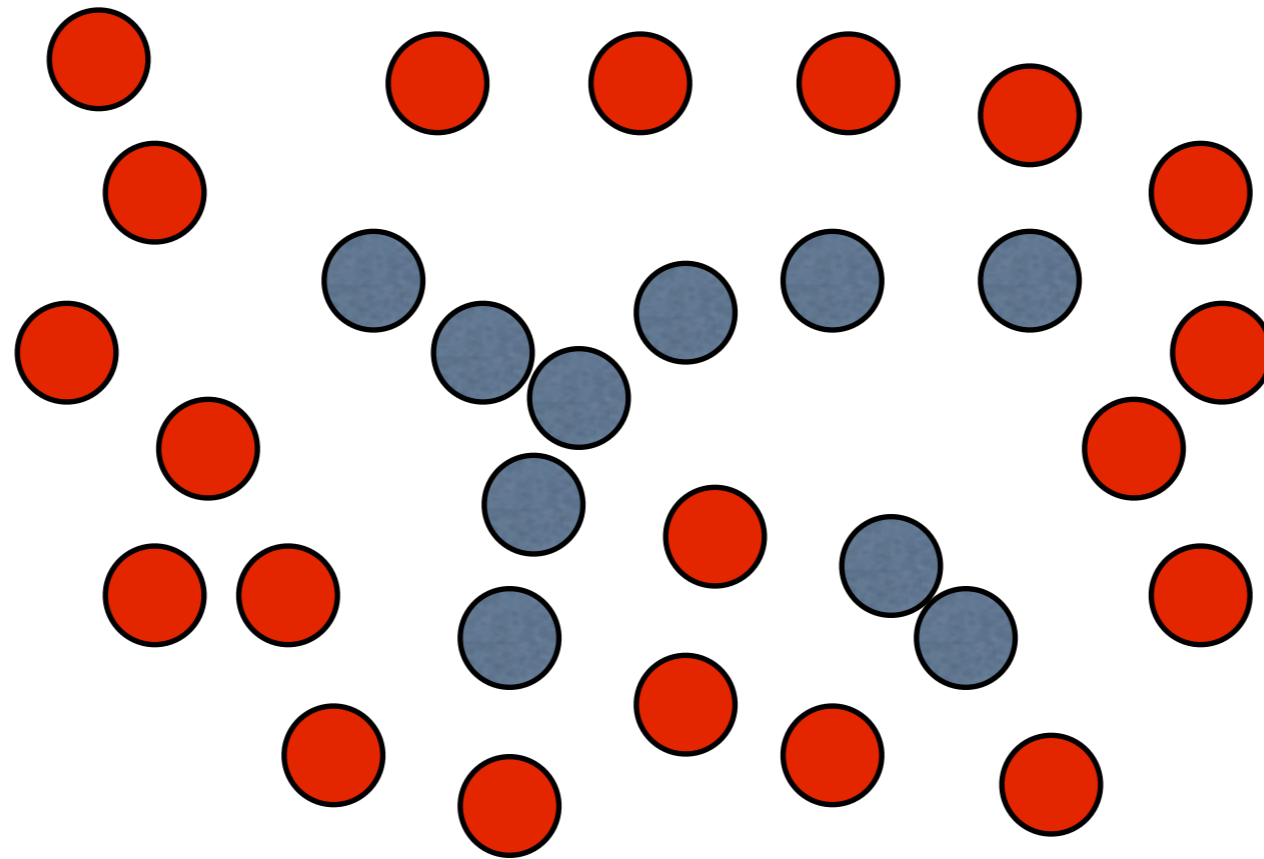
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Cosmic magnification predictions



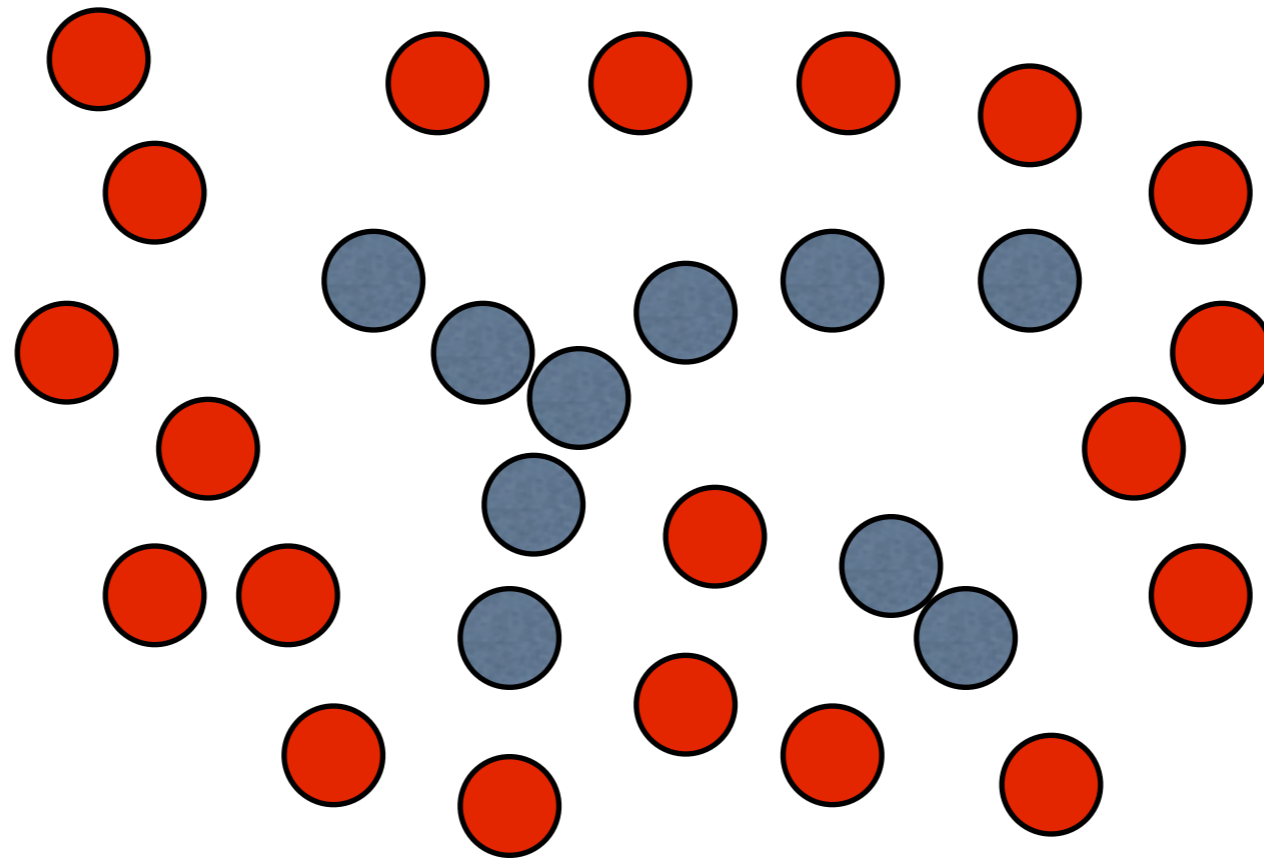
- Correlate **foreground** (eg SDSS) and **background** (MSSS) object densities

Cosmic magnification predictions



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Cosmic magnification predictions



- Correlate **foreground** (eg SDSS) and **background** (MSSS) object densities
- The foreground objects are acting as **lenses**

Cosmic magnification predictions

- The anti-correlation is due to **magnification**;
closely related to **matter power spectrum**

with **Hoyle**

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Cosmology,
geometry

$$\xi_{\mu\delta}(\phi) = \frac{3H_0^2\Omega_0}{c^2} \int_0^{w_H} dw' f_K(w') \bar{W}_Q(w') G_G(w') a^{-1}(w') \\ \times \int_0^\infty \frac{k dk}{2\pi} P_\delta(k, w') J_0[f_K(w')k\phi] .$$

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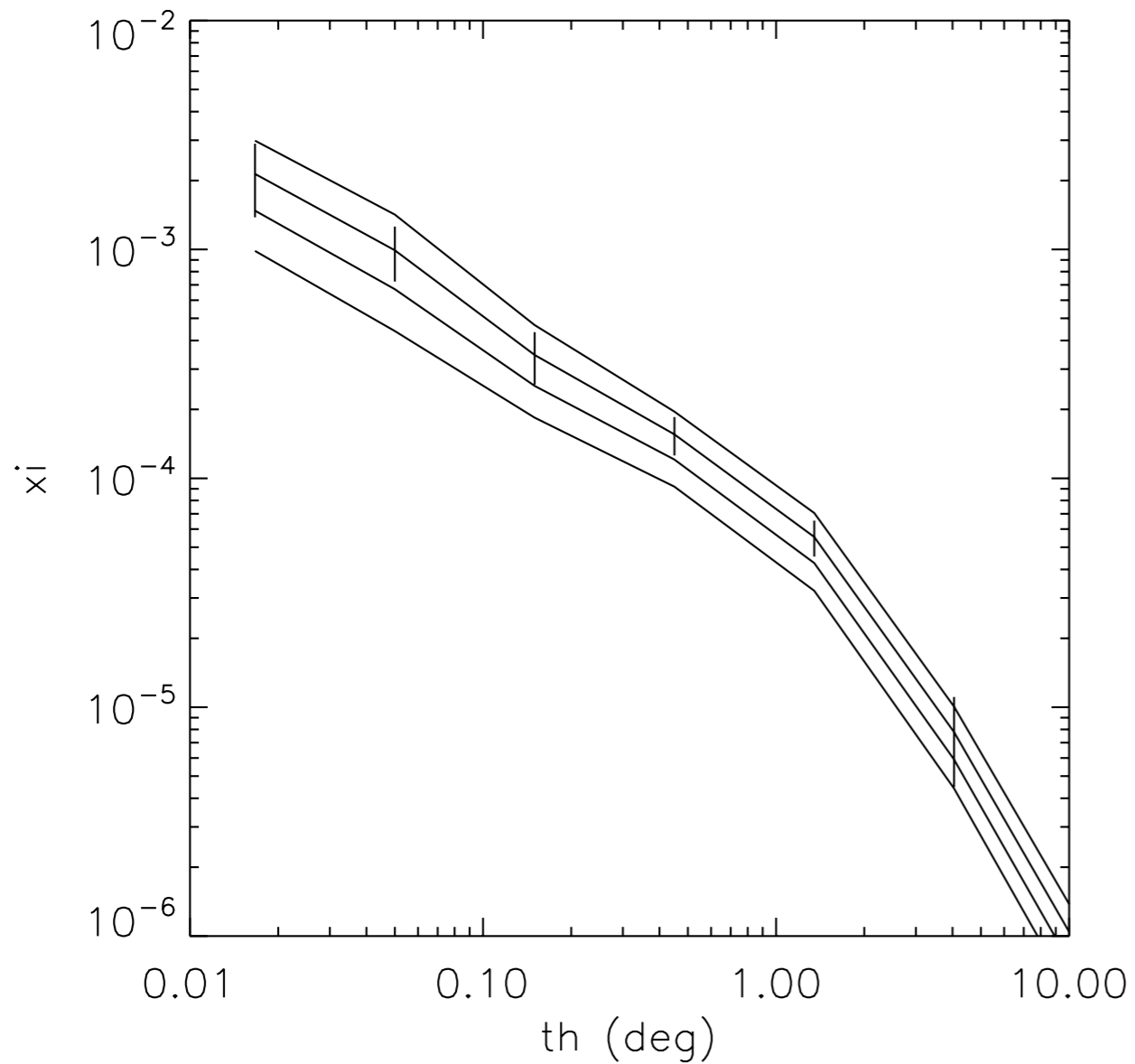
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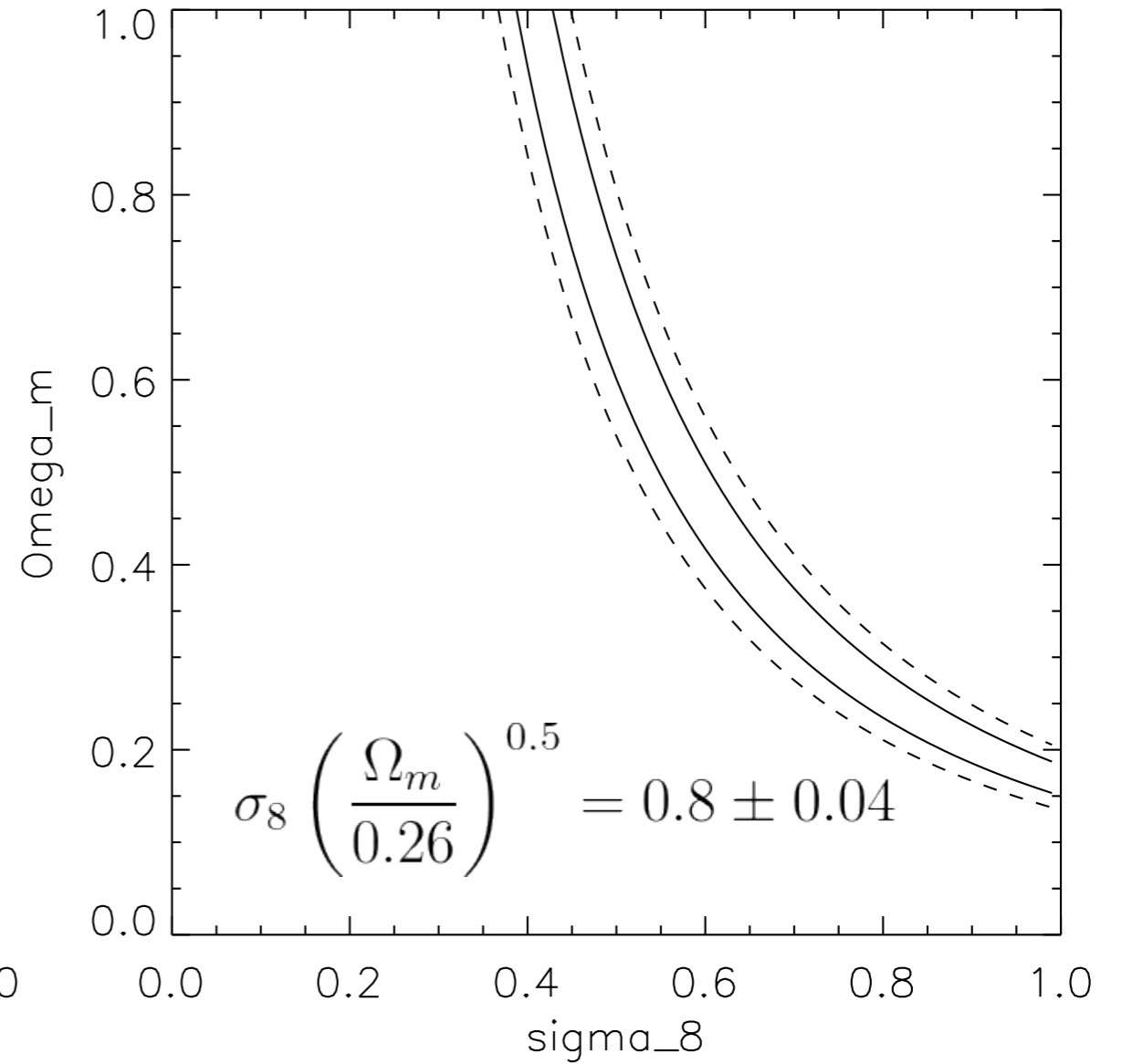
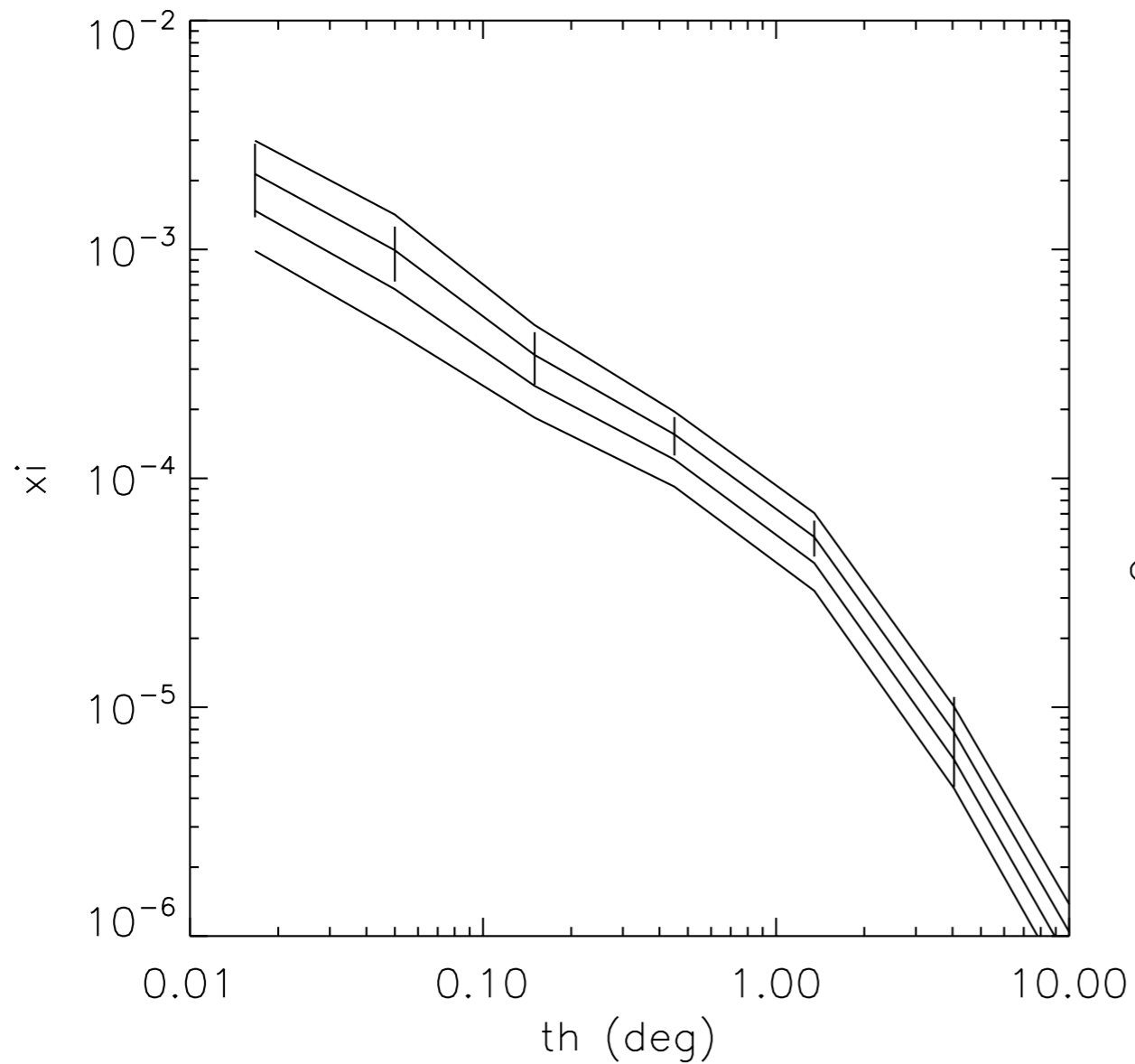
Matter power spectrum

with **Hoyle**

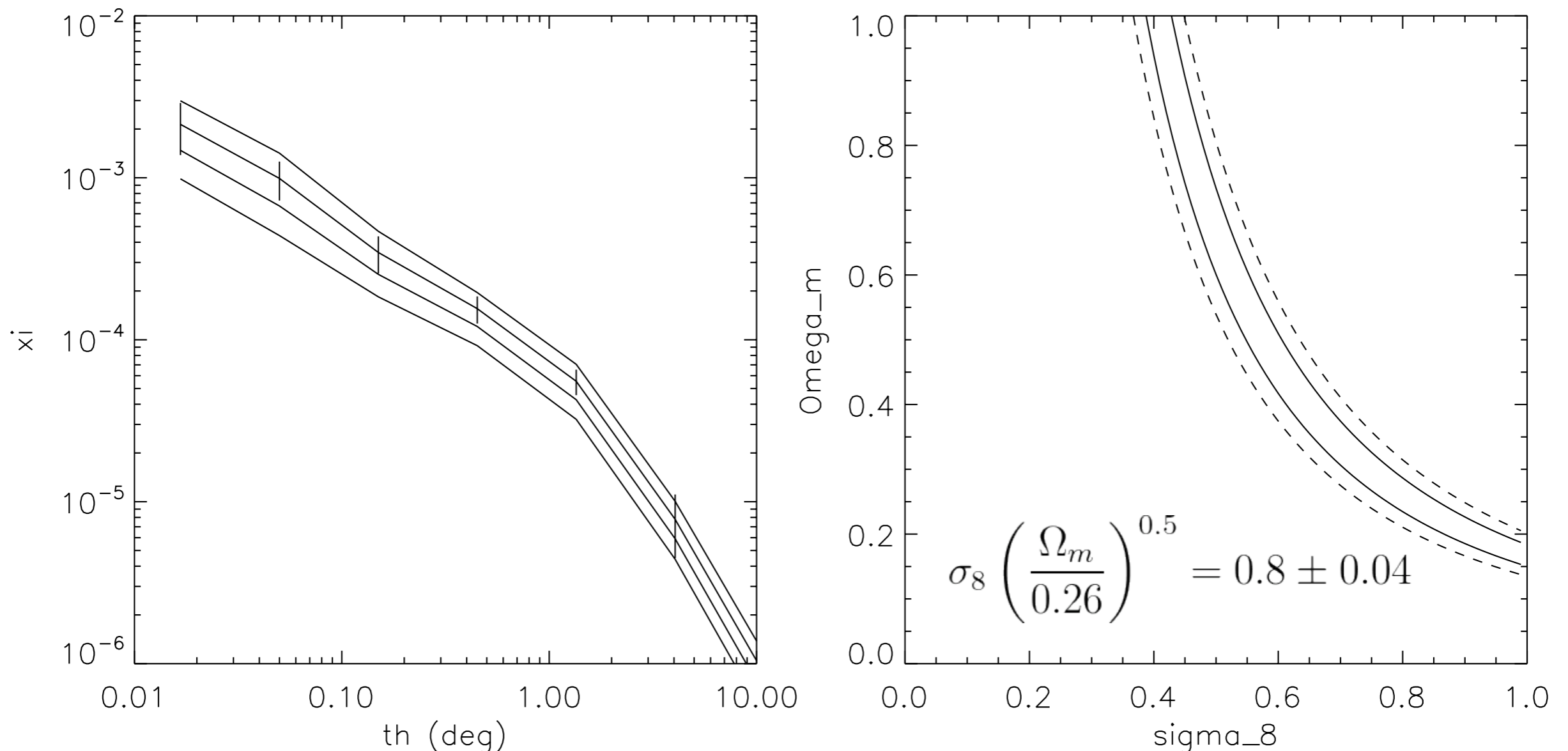
Cosmic magnification predictions for MSSS



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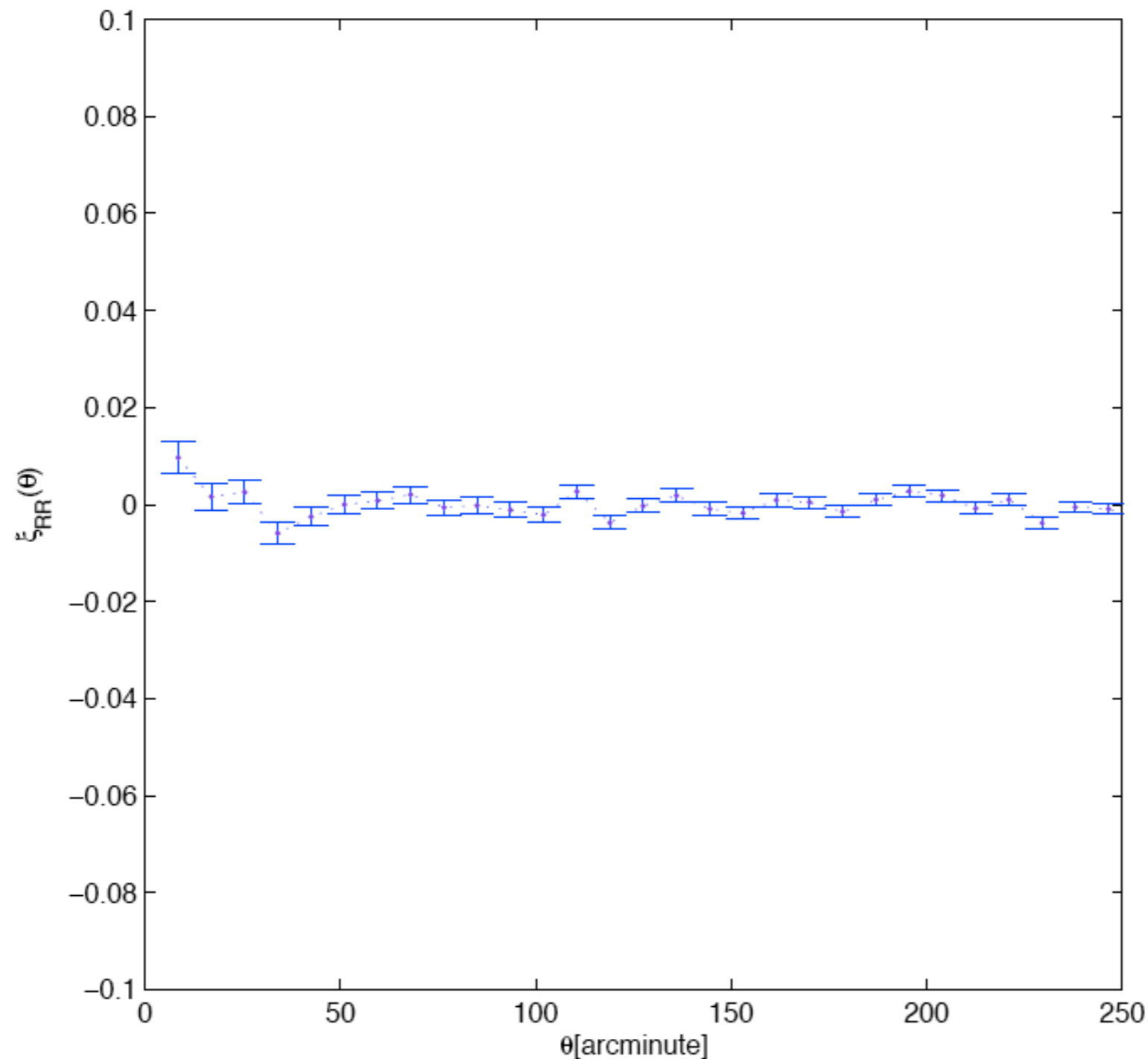


Cosmic magnification predictions for MSSS



**Probably best possible case -
with MSSS this challenging measurement will help
us calibrate!**

NVSS-SDSS attempt underway



with
Kubwimana

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- Sensitivity **variation** across sky would be noticed by this approach
- Need **redshift** distribution

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- Cosmic magnification can be plausibly attempted by **MSSS**
- It is a correlation, and will check flux **calibration** across sky
- Measures a combination of **matter power** and **geometry**
- One small step for radio weak lensing...