

# Processing Shear Maps with Karhunen-Loeve Analysis

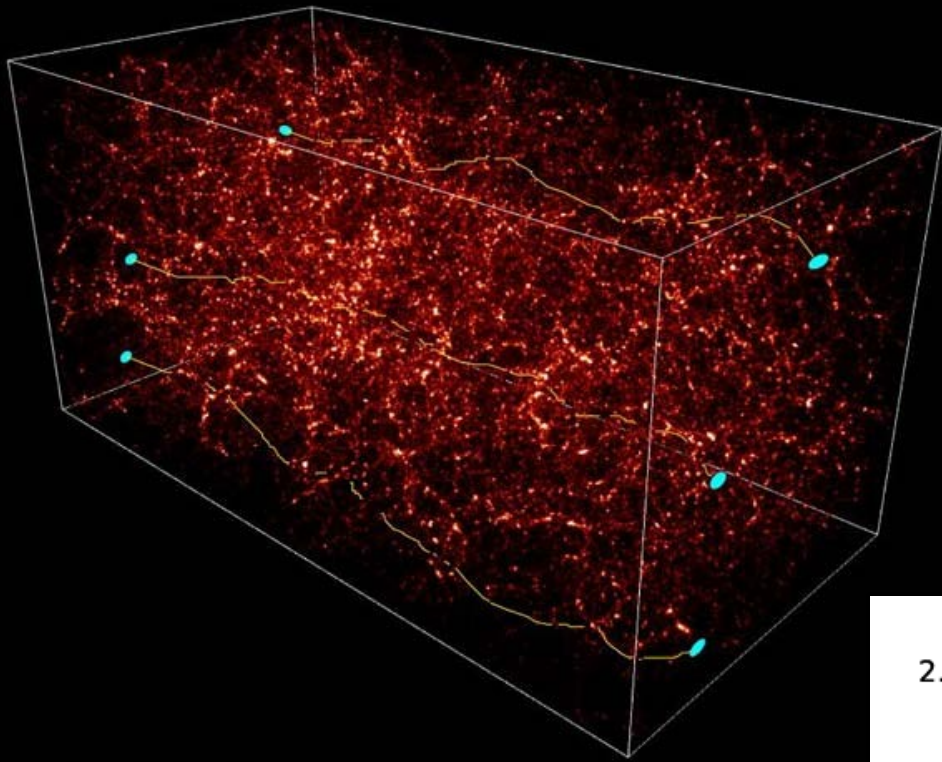
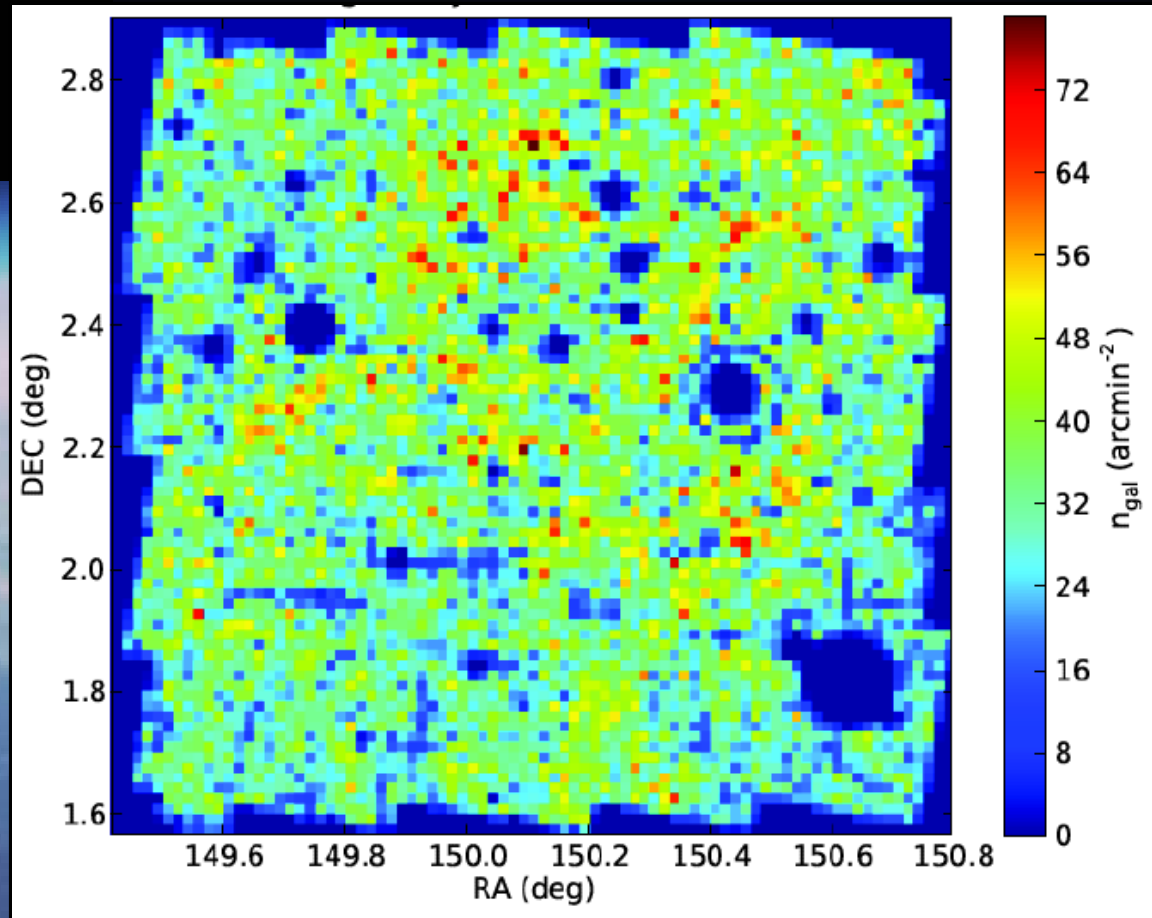
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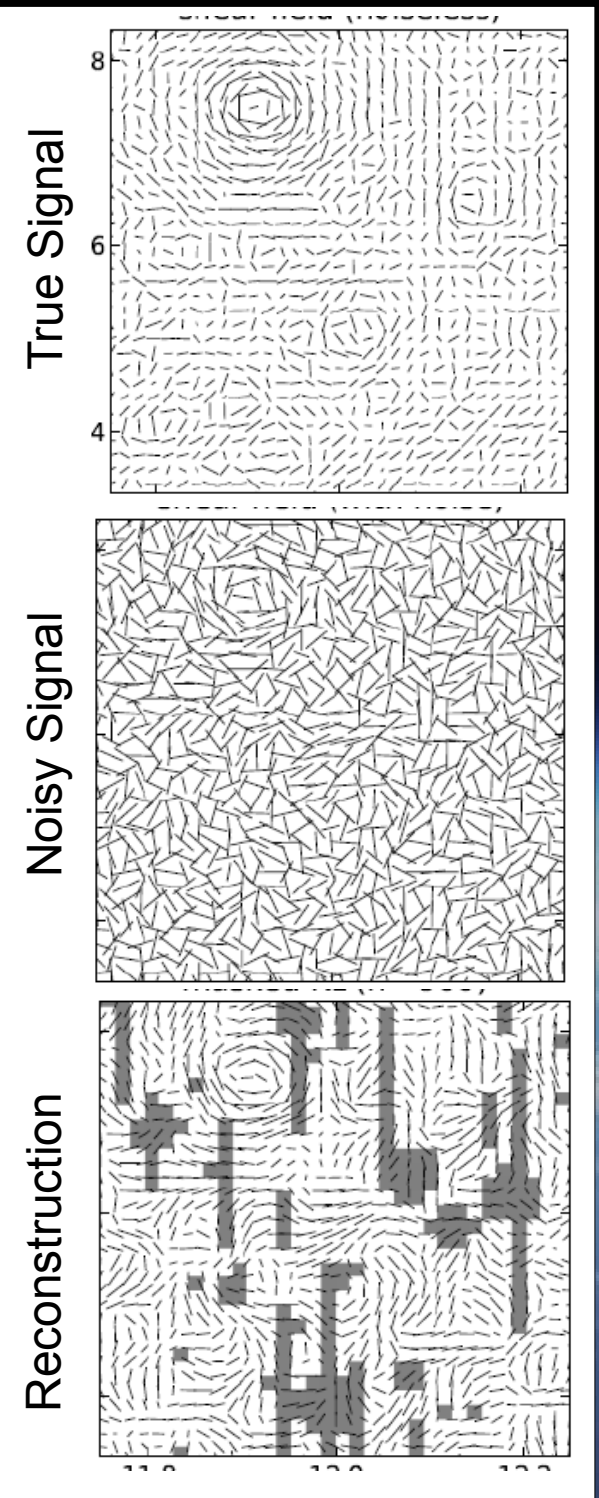
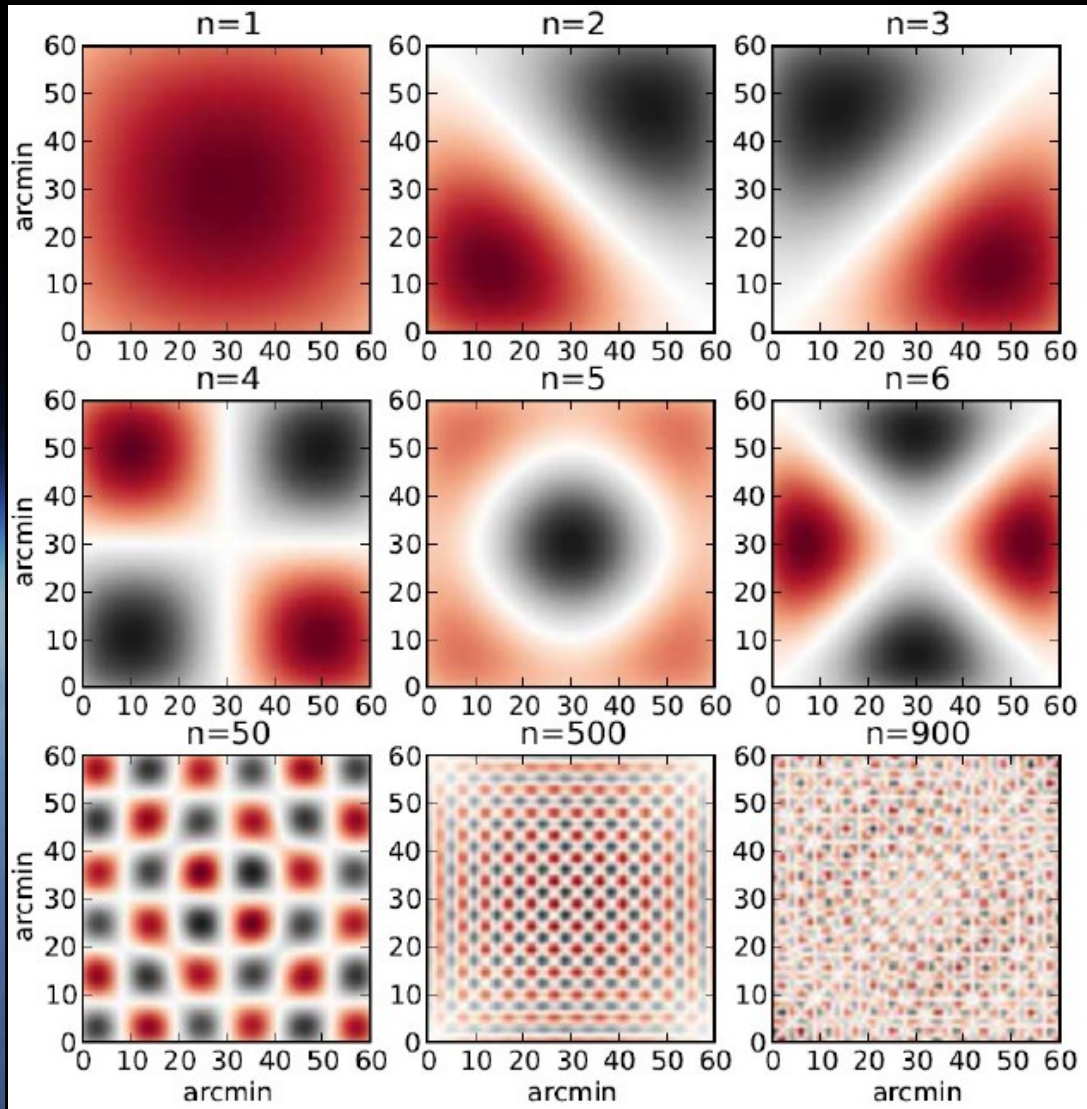
# Weak Lensing:

Can yield information about fundamental aspects of the universe, but gappy data leads to challenges.

COSMOS source density:



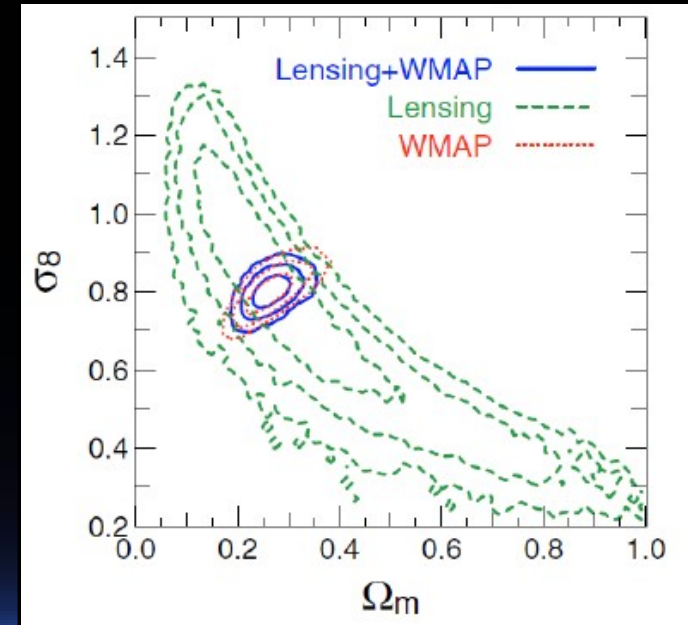
We use Karhunen-Loeve analysis as a model for a compressed-sensing approach to the problem. The KL modes are constructed from theoretical expectations:



KL offers a path to filter noise, and to encode 2-point (covariance) information in a way that is robust to noise.

We show that the approach leads to decreased bias in dark matter mapping, and offers a natural path to inform studies of the nature of dark matter and dark energy.

COSMOS 2-point results:  
Schraback 2010



Simulated Shear Map

