

Ambiguously Blended Objects

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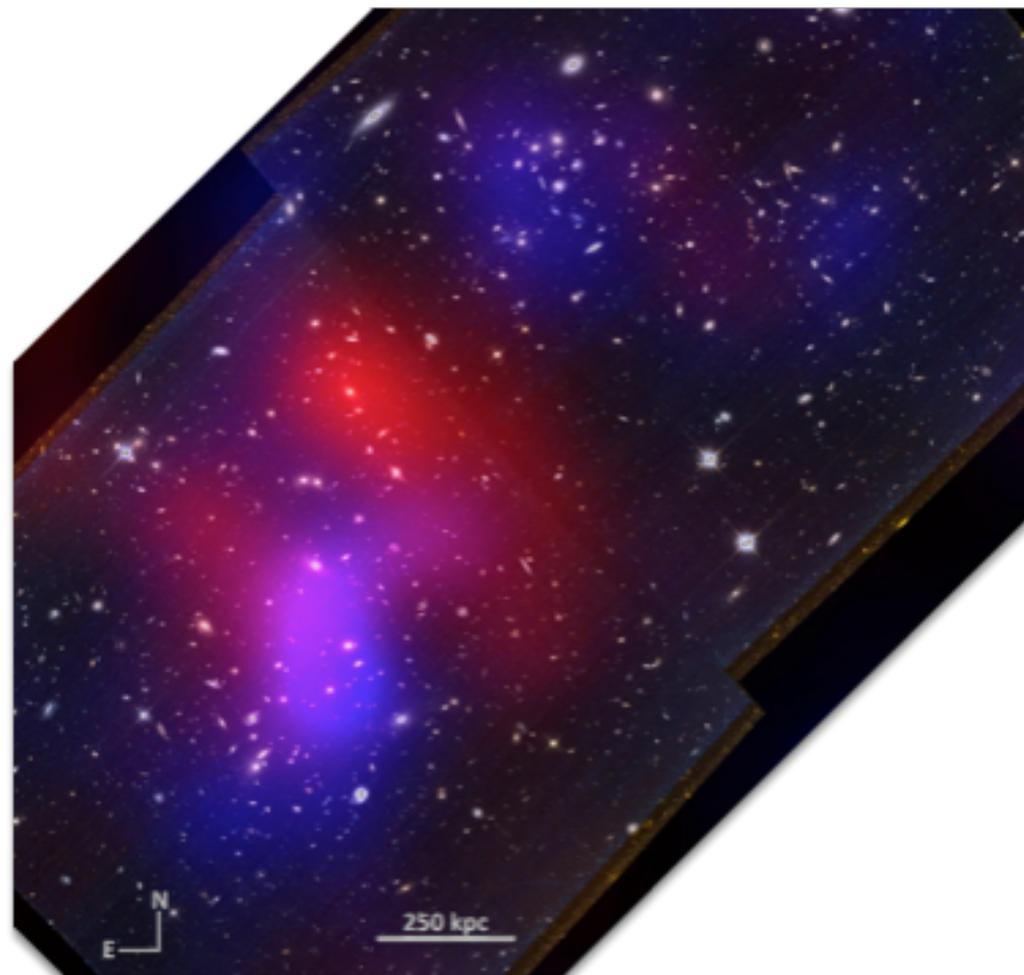
This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract DE-AC52-07NA27344. Lawrence Livermore National Security, LLC



Comparing Space and Ground Based Observations



Overlapping coverage of the Musket Ball Cluster

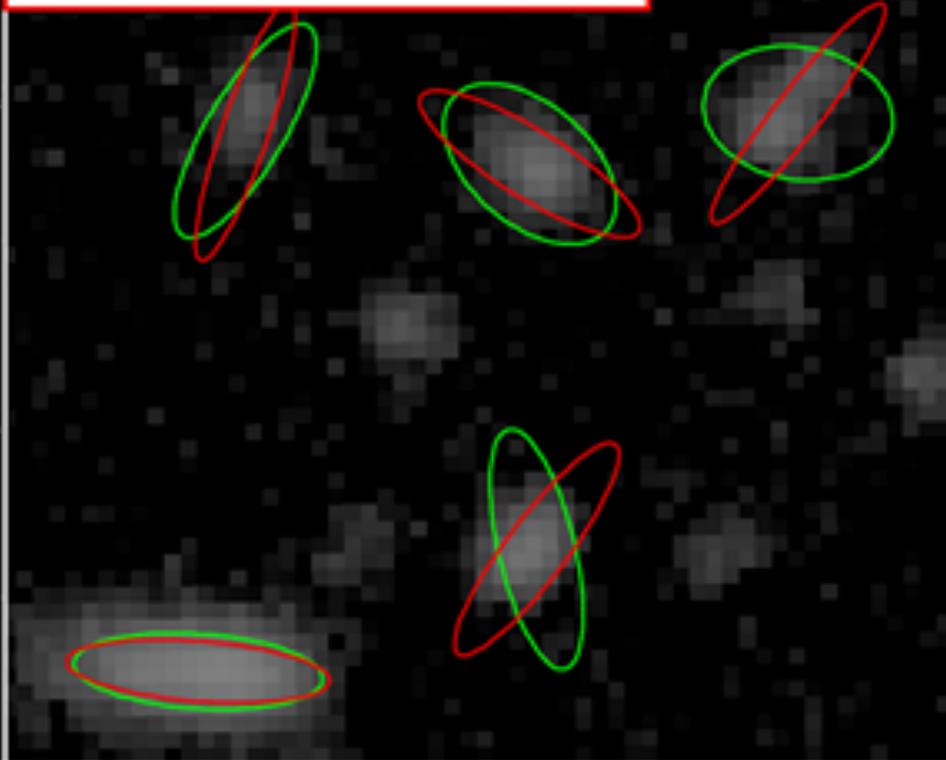


Examples of blends

Space: Hubble ACS

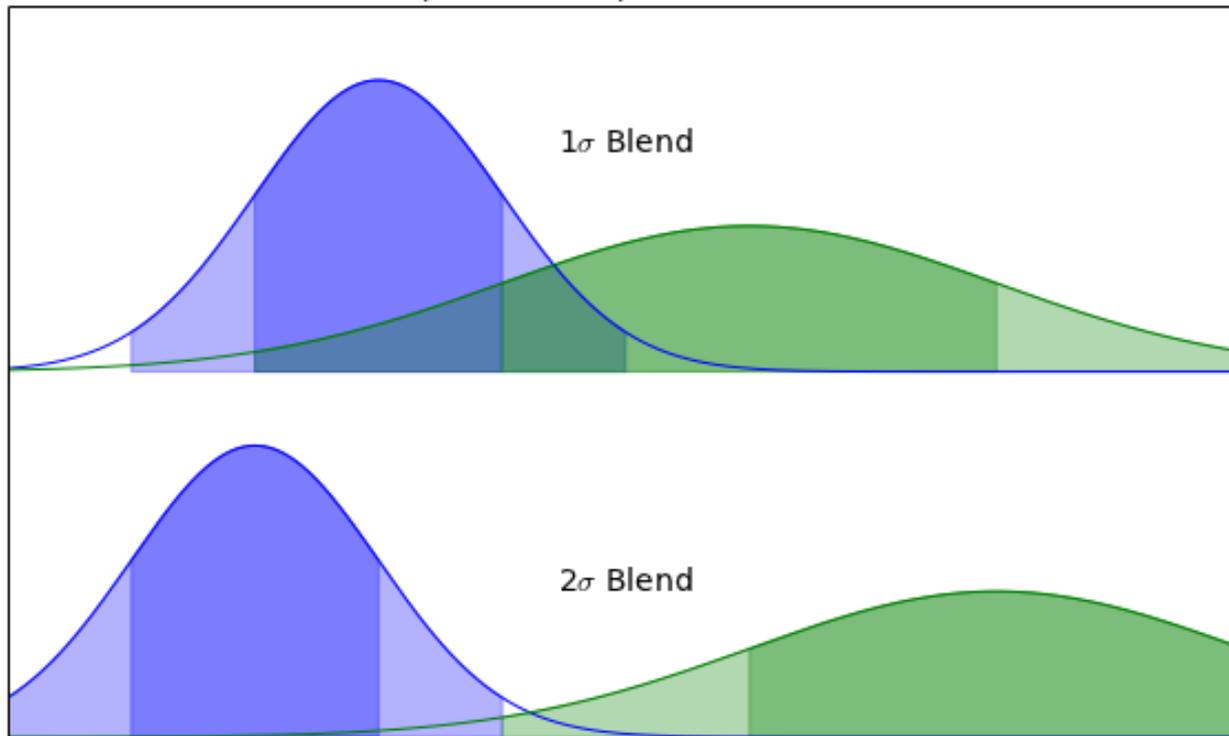


Ground: Subaru Suprime-Cam



Distinction between types of blends

Maximum separation examples for definition of a blend.

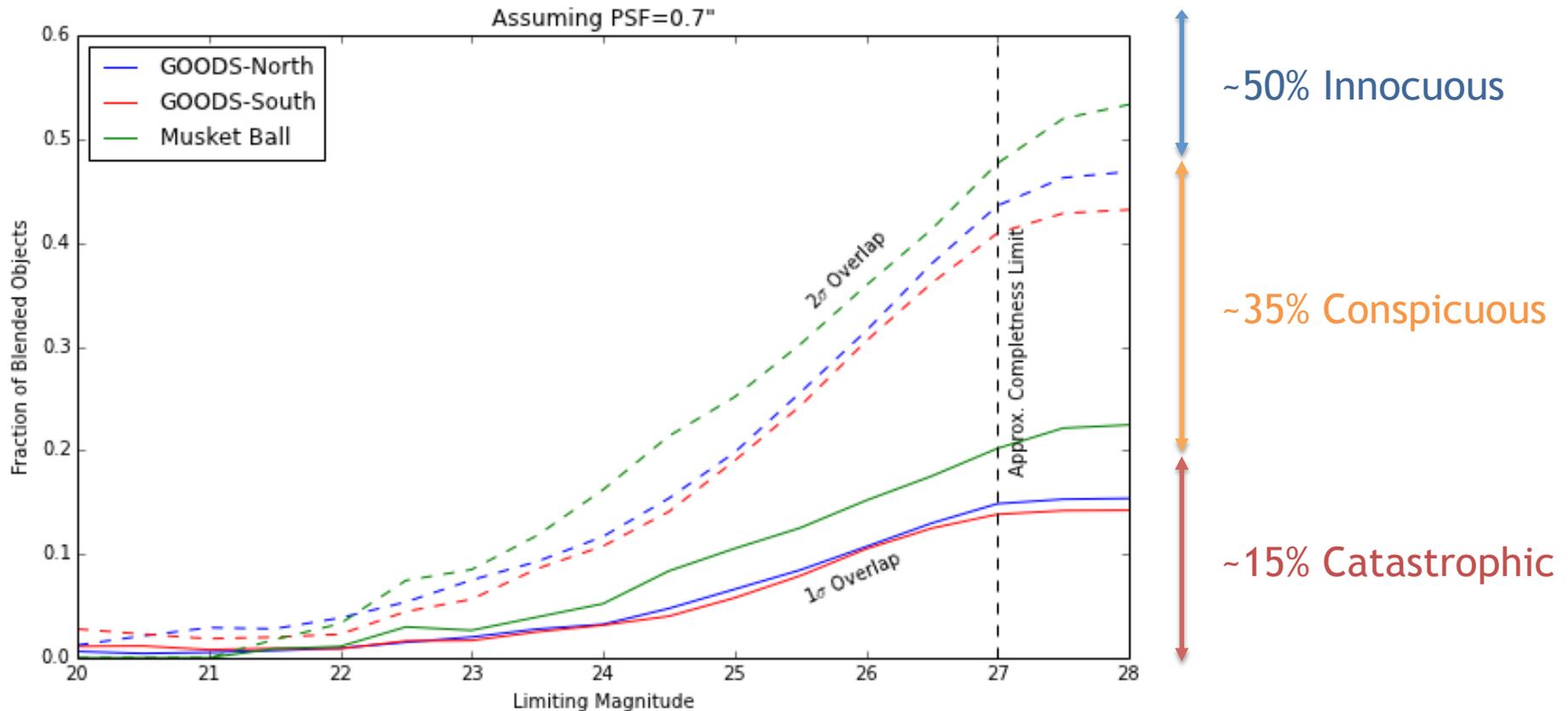


Catastrophic

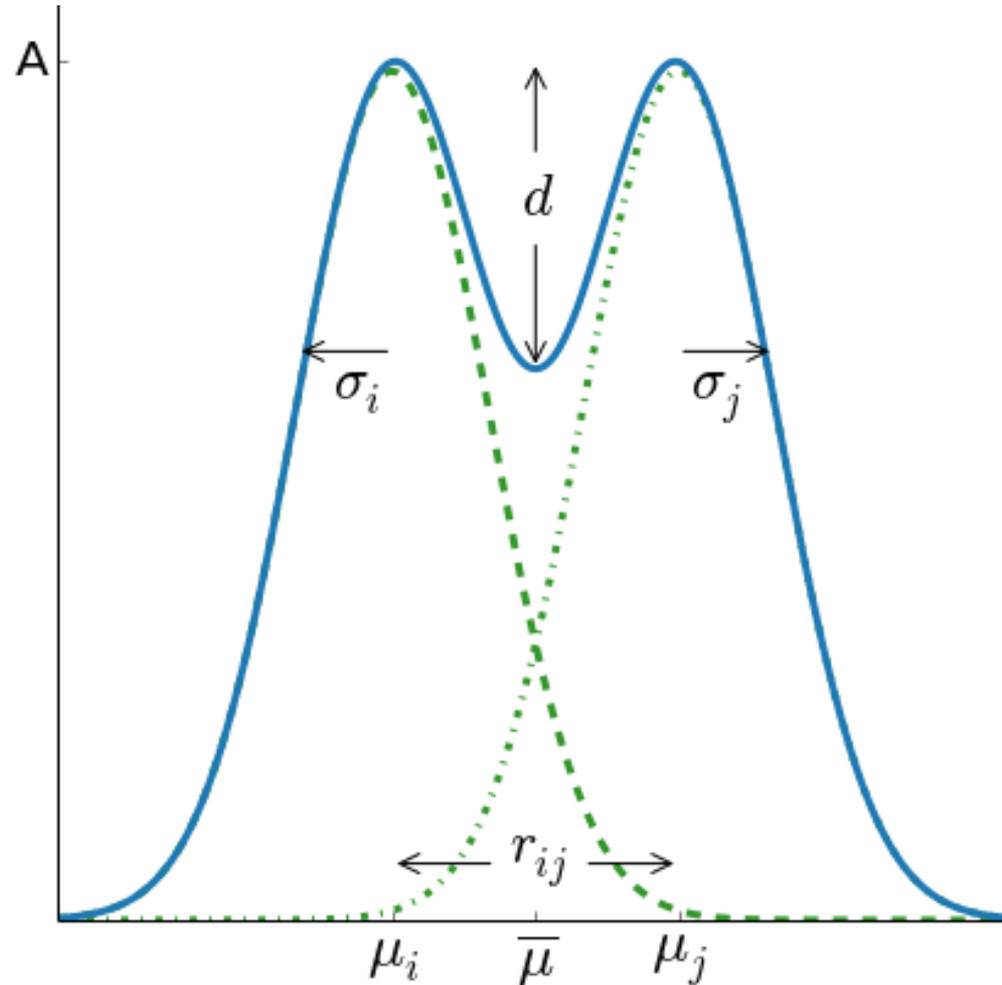
Conspicuous

Innocuous

Blending will affect a large number of objects

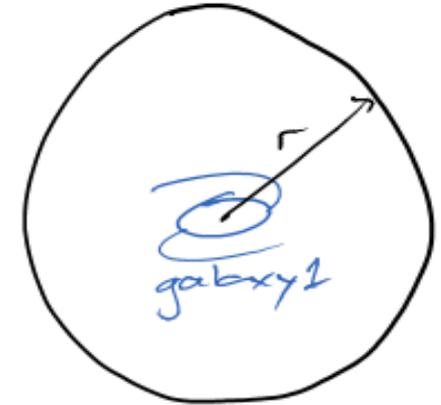


Cartoon of two blended objects



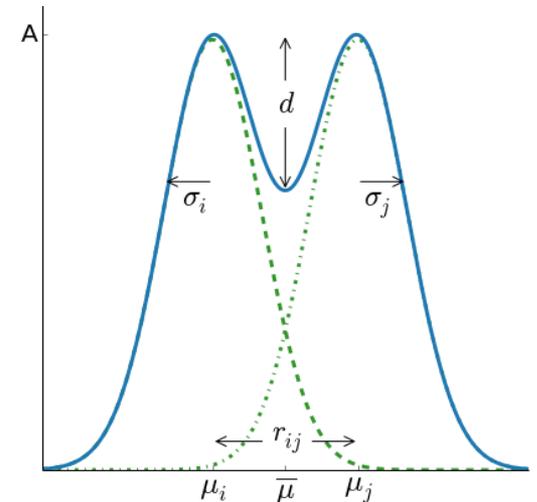
Probability of their being a catastrophic blend

$$p(\text{pair}) \propto 2\pi n r_{ij} dr_{ij}$$

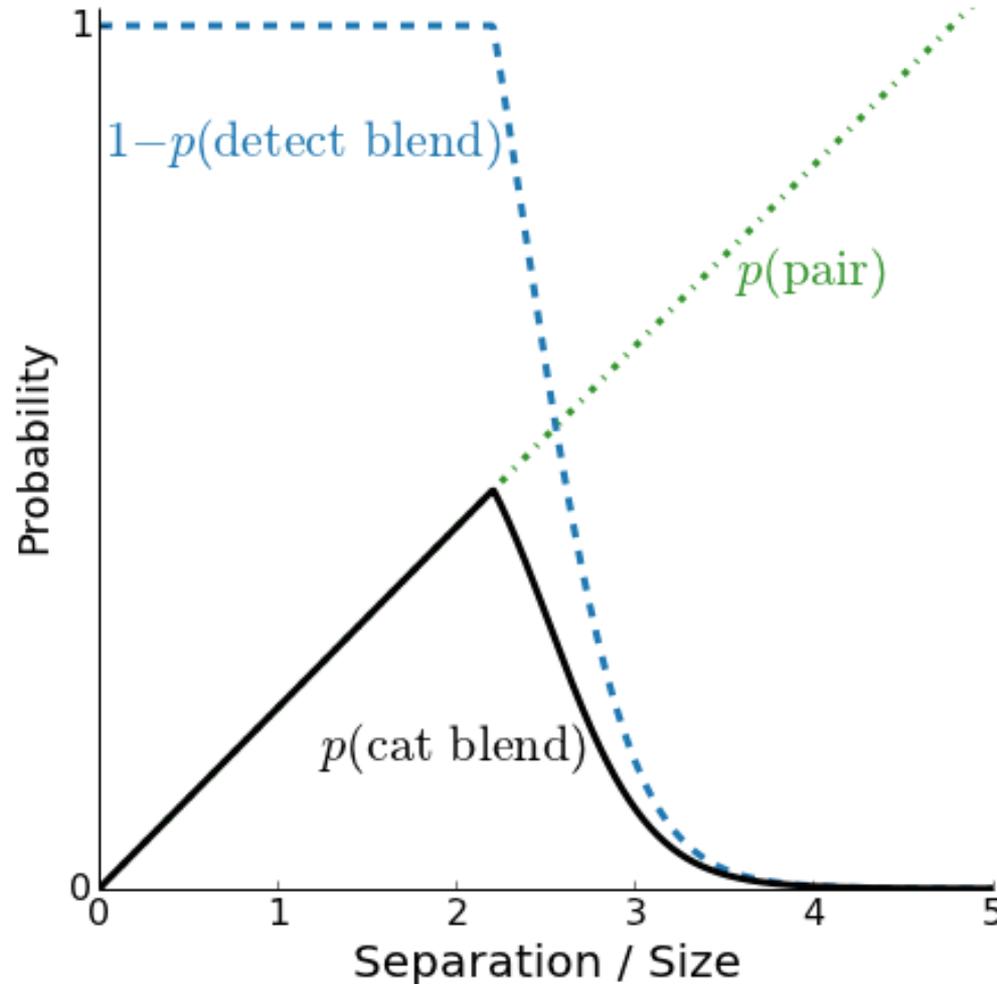


$$1 - p(\text{detect blend}) = 1 - \frac{\text{erf}(\Delta/\sqrt{2})}{2}$$

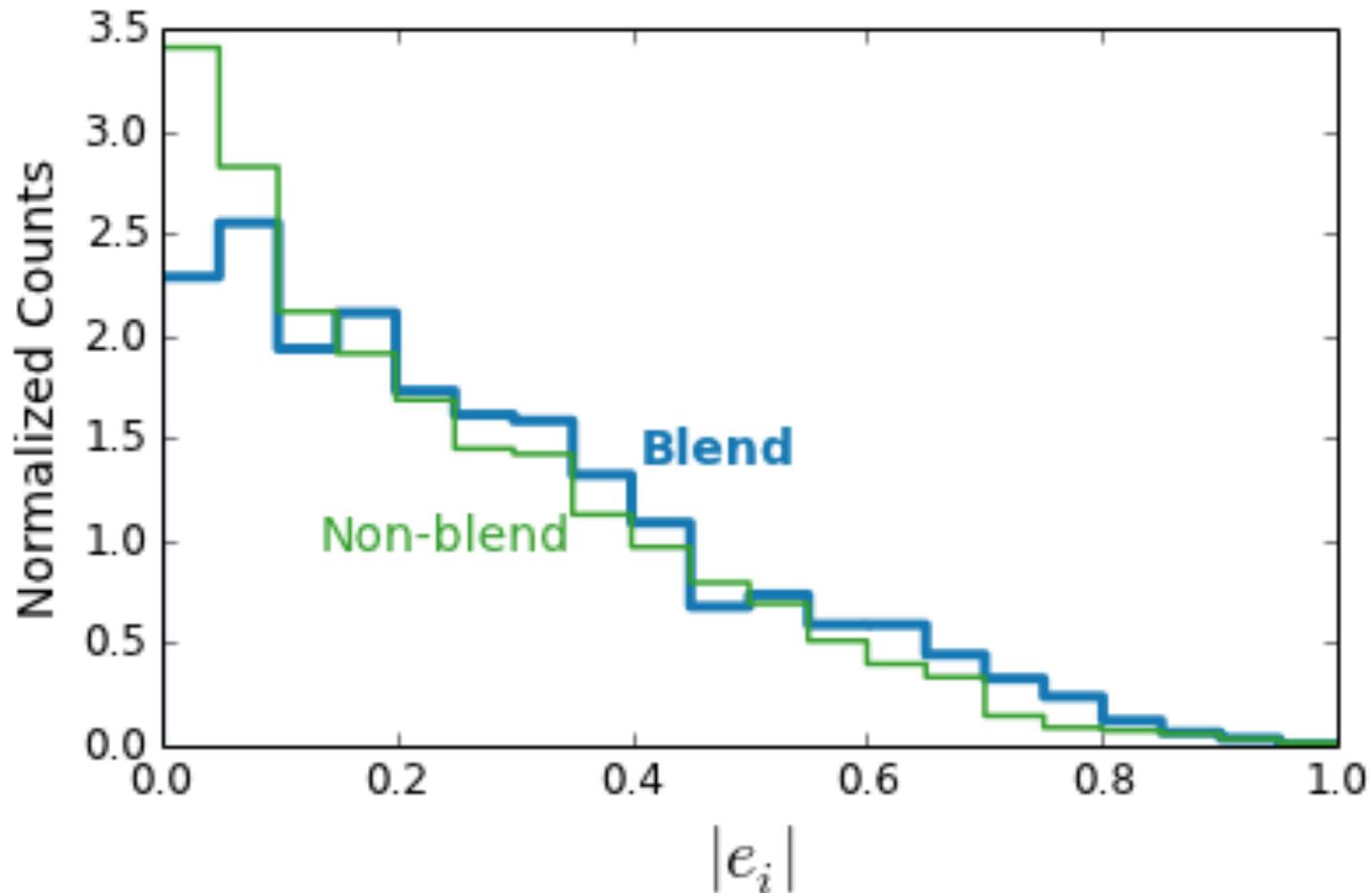
$$\Delta \equiv \frac{d}{\sigma_{rms}}$$



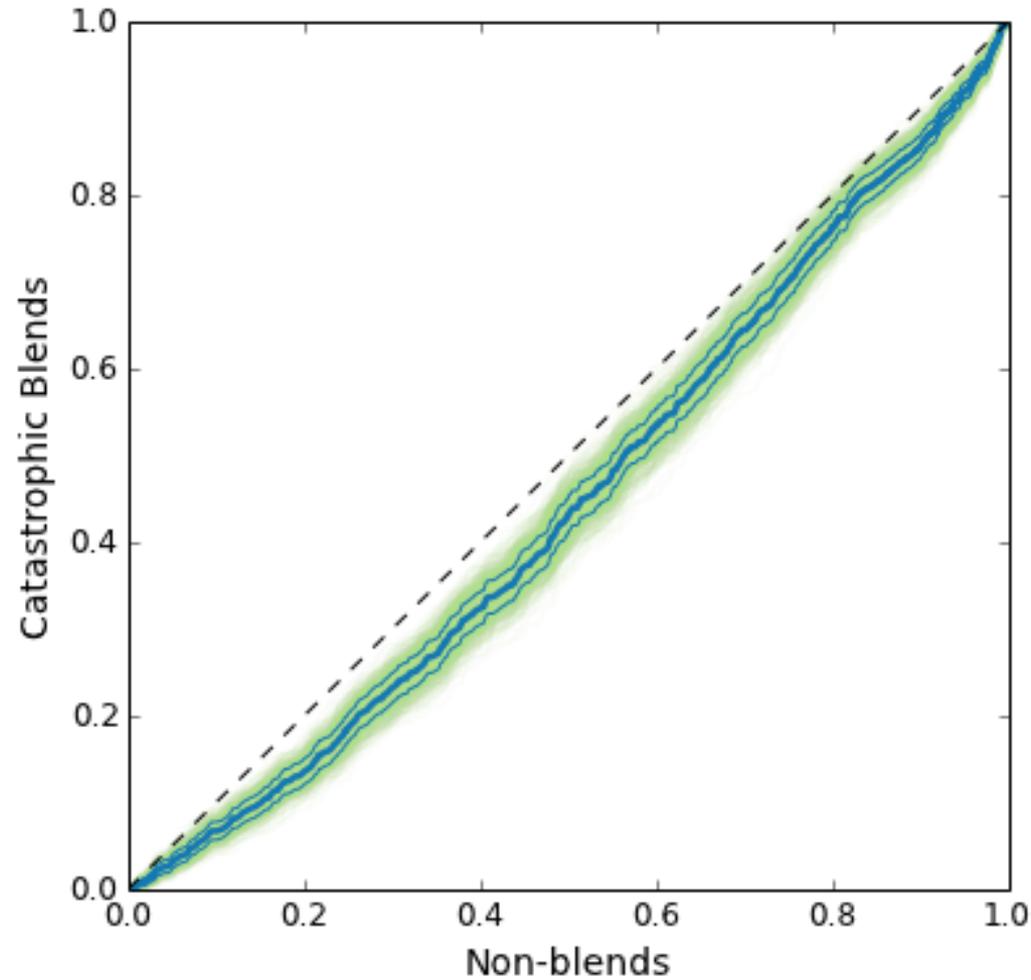
Resulting joint probability has peak offset from zero



Catastrophic blends have higher ellipticity dispersion

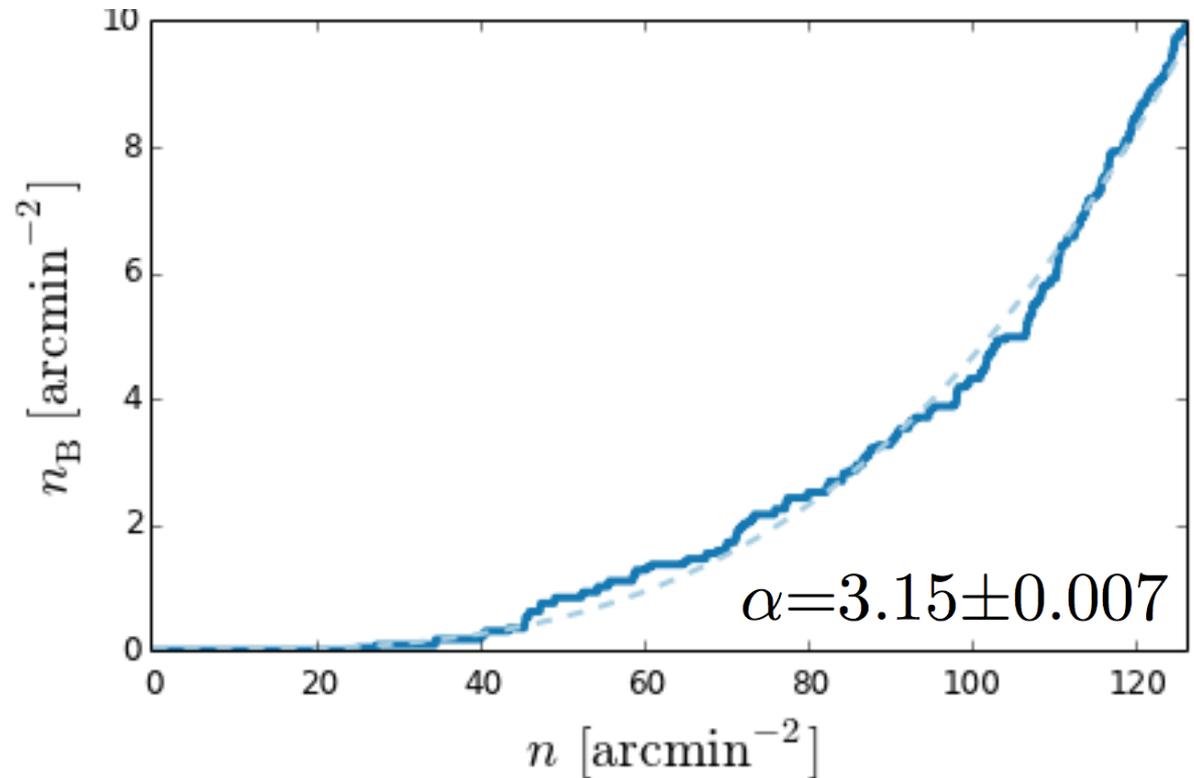


The difference is significant



Number of catastrophic blends strong function of object density

Number density of
catastrophic blends
in Subaru



$$n_B \equiv \nu n^\alpha$$

Number density of raw objects
(i.e. those observed with HST)