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Efficient multi-band deblending

Tuesday, 13 June 2017 10:00 (40 minutes)

LSST and similarly deep surveys have to deal with ~40% of all objects being blended with others. The classical deblending approaches are often insufficient for high-quality measurements of galaxy properties. Their failures are related to simplifying assumptions about the galaxy shape or massive parameter degeneracies for complex galaxy models, and the reliance on single-band imaging.

I will present a new algorithm (Melchior et al., in prep.) that is natively represented in multi-band data, i.e. it considers the SED the fundamental unit of measurement instead of per-band fluxes, and constrains the galaxy morphologies in a non-parametric fashion to avoid unstable results and model biases. The resulting constrained optimization problem is efficiently solved with a novel deterministic proximal algorithm (Moolekamp & Melchior, in prep.) with guaranteed convergence. I will show results from simulations and deep HSC imaging, and discuss the substantial gains from combining ground- and space-based imaging.

Presenter: Mr MELCHIOR, Peter (Princeton University)

Session Classification: Workshop