

Surface Brightness Fluctuations as a

Distance Indicator for Rubin

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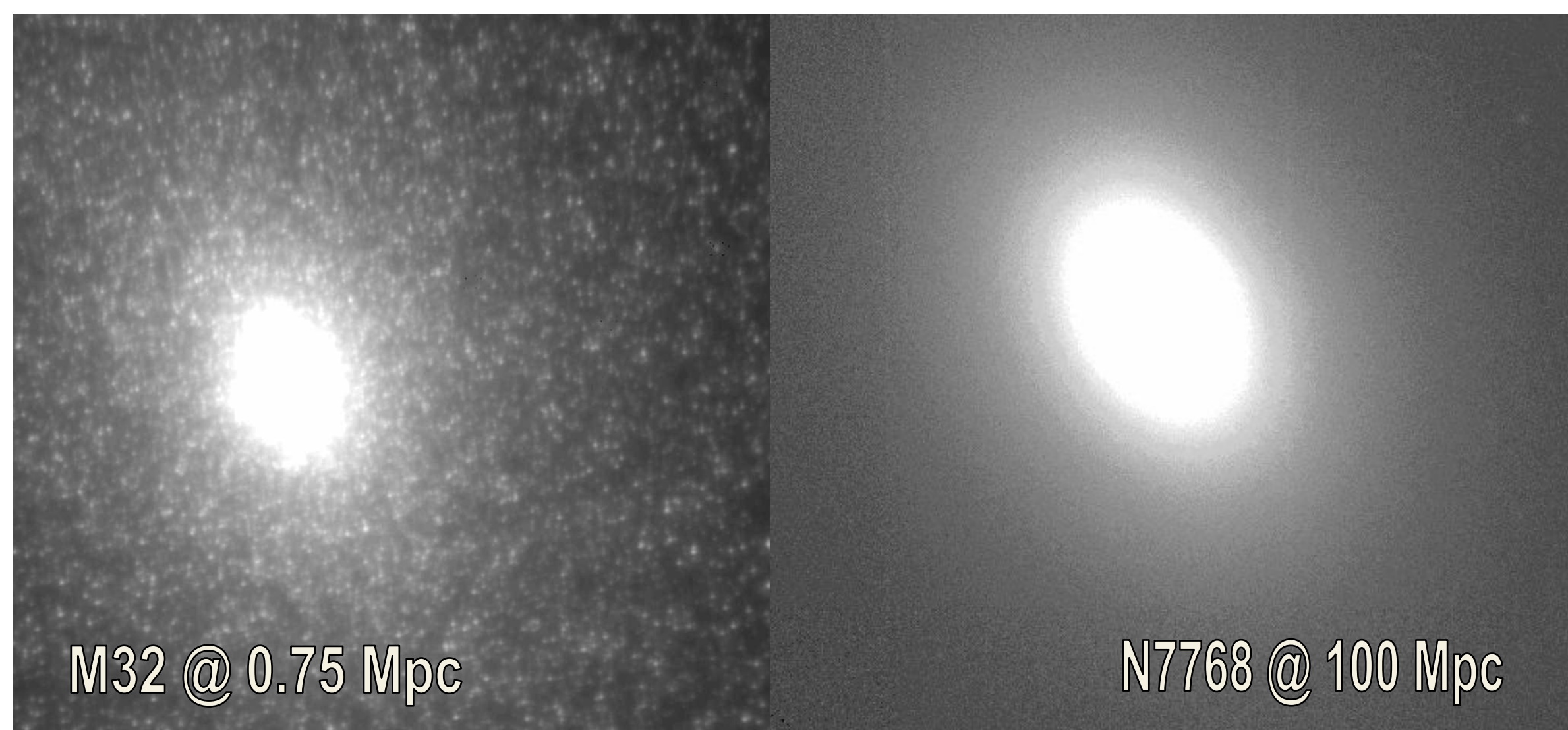


Objectives & Research Question:

- Make SBF distance measurements more accessible to the community
- Measure SBF distances with minimal human intervention

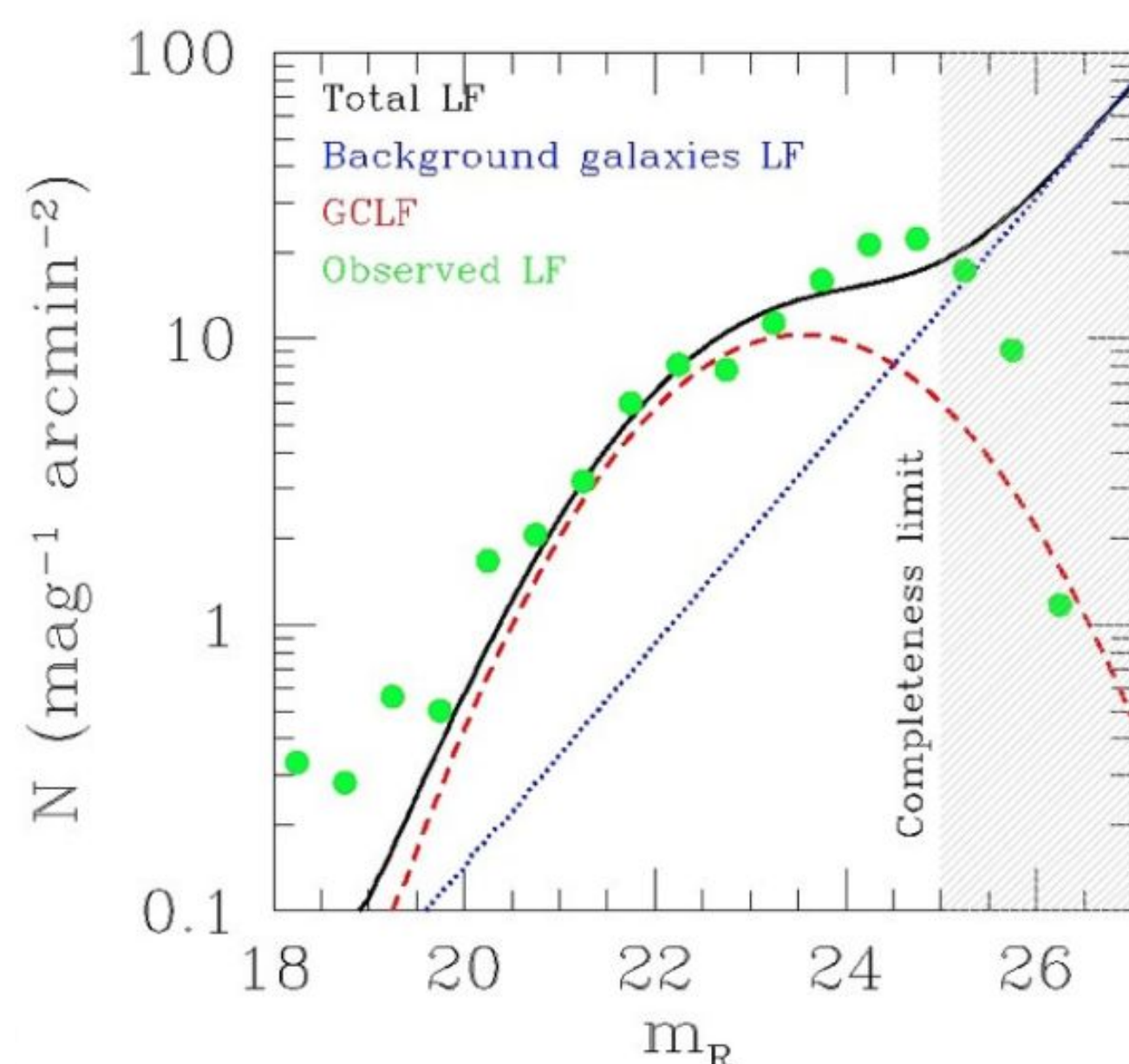
The SBF method:

Pixel-to-pixel variation of the surface brightness due to underlying stars can be used to calibrate the distance to a galaxy



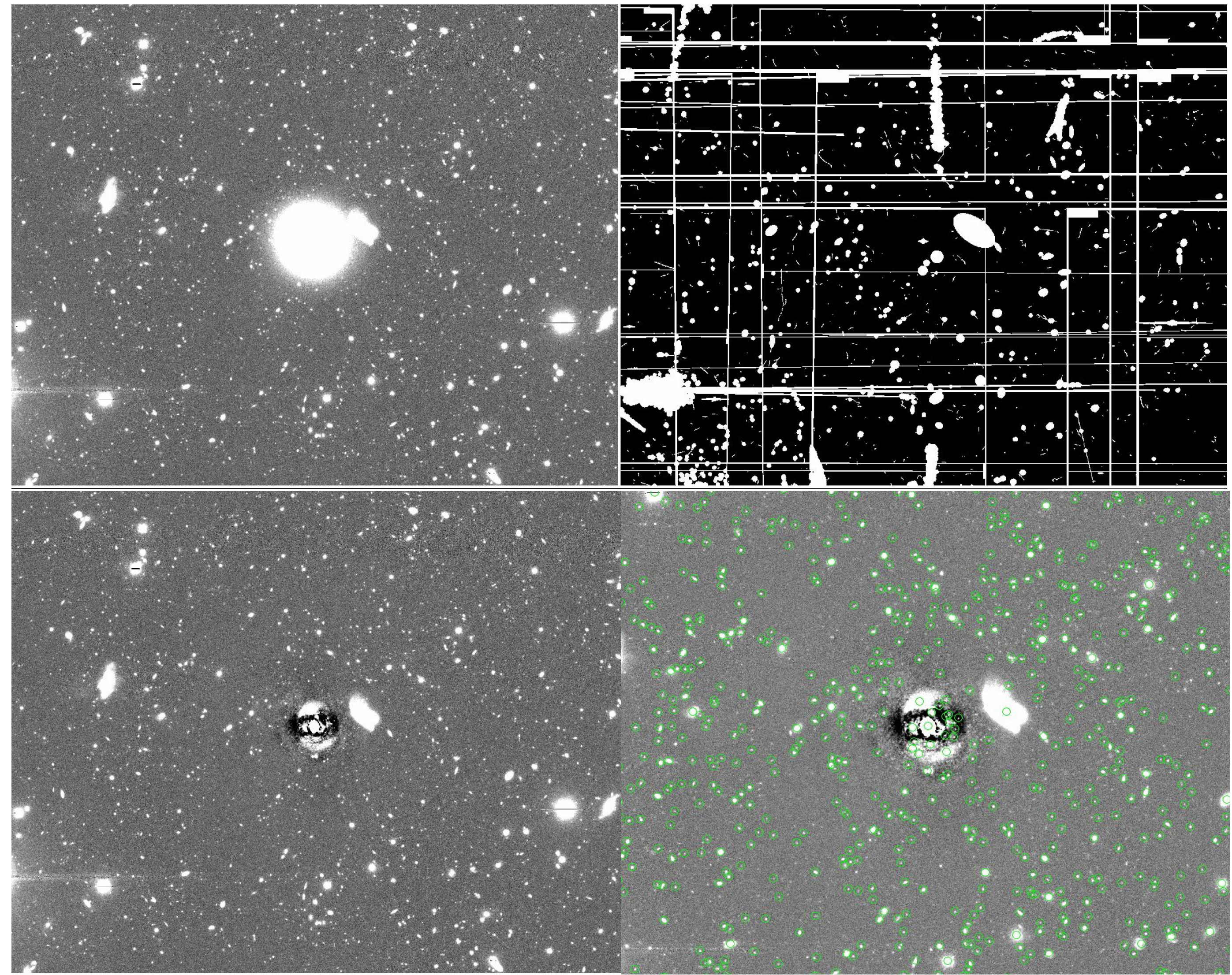
Methodology:

- We are using a sample of bright galaxies from the HSC survey to test a pipeline for measuring SBF amplitudes
- Using galaxy modelling and masking iteratively and performing accurate photometry to characterise sources and measure the SBF signal
- Characterise sources of noise: mainly globular clusters



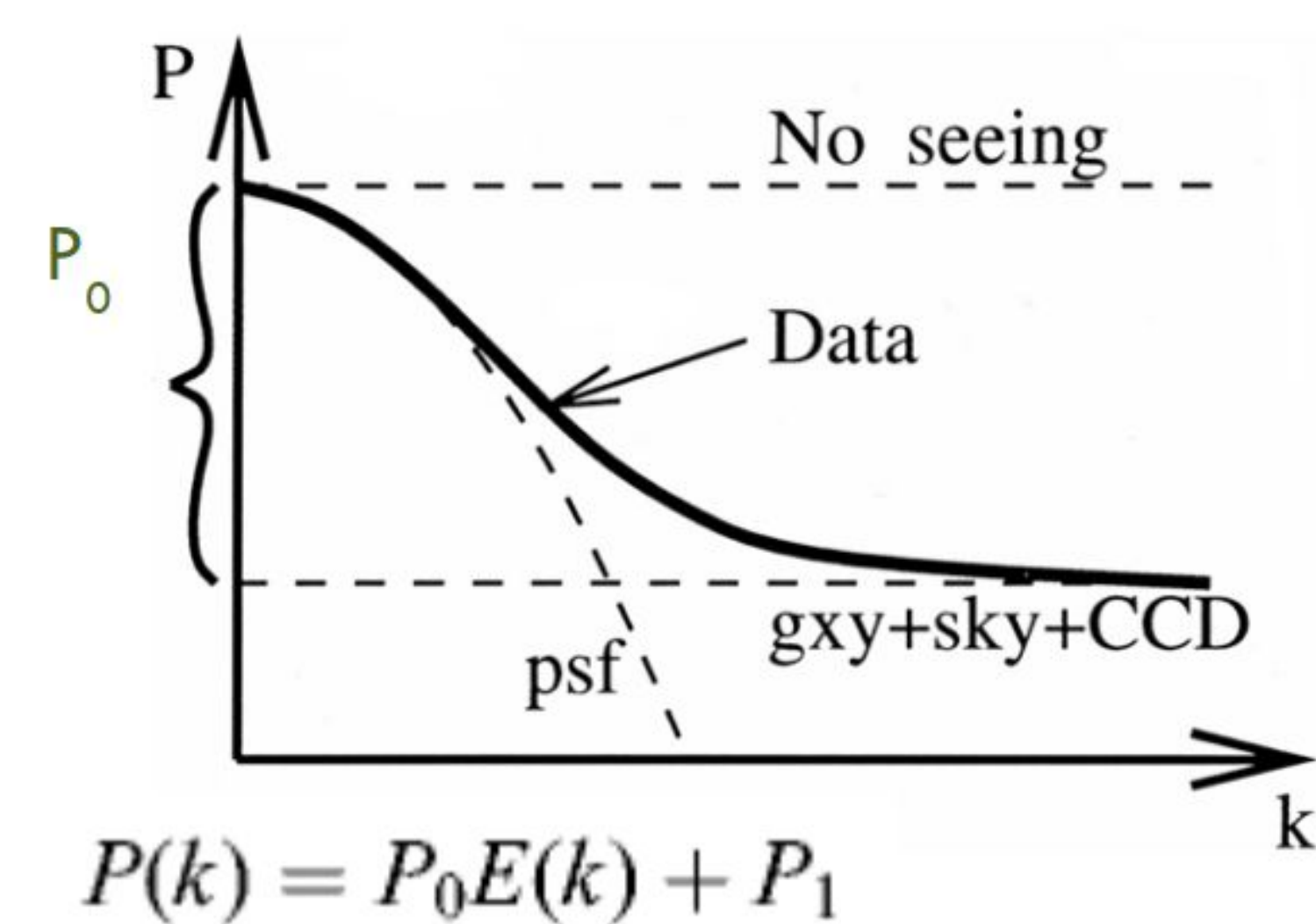
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Current Status:



Masking, modelling and photometry

Next steps: power spectrum analysis, calibration



Discussion:

SBF distances are accurate up to 4% even for individual measures. Our pipeline would provide fast, reliable distance measures for Rubin, and for EM follow up of GW event hosts

Conclusions and Future Work:

- We are in the process of measuring and calibrating the SBF signal in HSC data, and extend this analysis to DP0 data as well
- We would like to implement ML techniques to SBF measurements