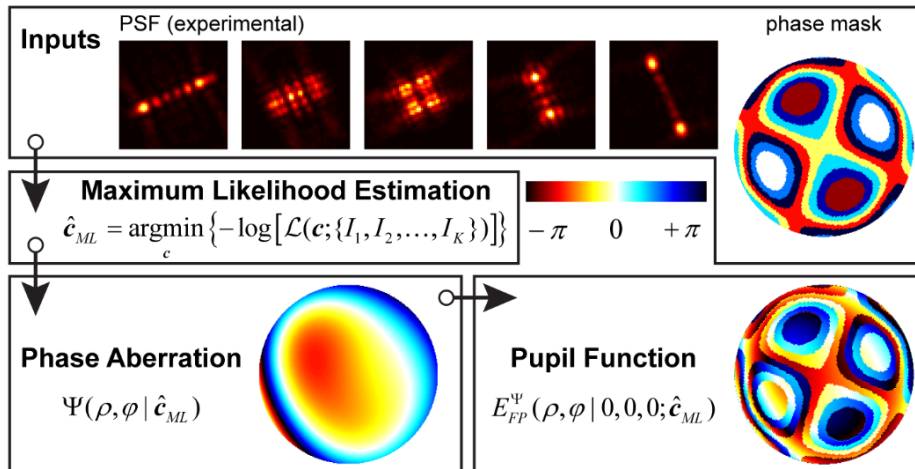
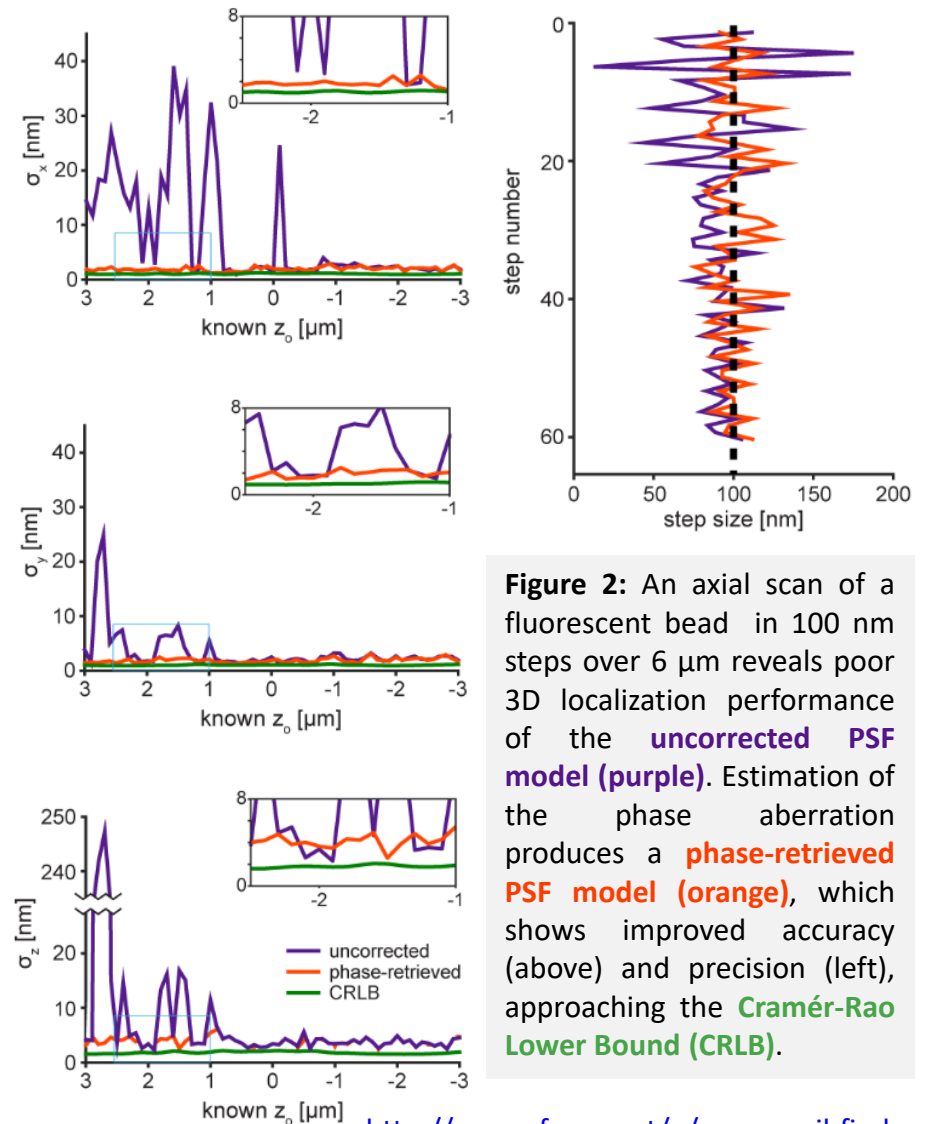


# Measurement-based estimation of global pupil functions in 3D localization microscopy

- Phase aberrations distort the experimentally-measured point spread function relative to its theoretical shape, limiting the accuracy and precision of 3D localization procedures.
- We demonstrate an algorithm for improving the PSF model by estimating the aberrations using the Tetrapod engineered PSF.



**Figure 1:** Schematic of the phase retrieval algorithm. A map of the phase mask pattern is used to produce the theoretical model, and a set of experimental images of the (tetrapod) PSF is used to perform the MLE step. The estimation procedure returns a phase aberration term, which is added to the original phase mask pattern to produce the overall corrected pupil function.



<http://sourceforge.net/p/easy-pupil-finder>