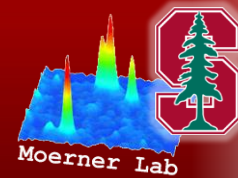
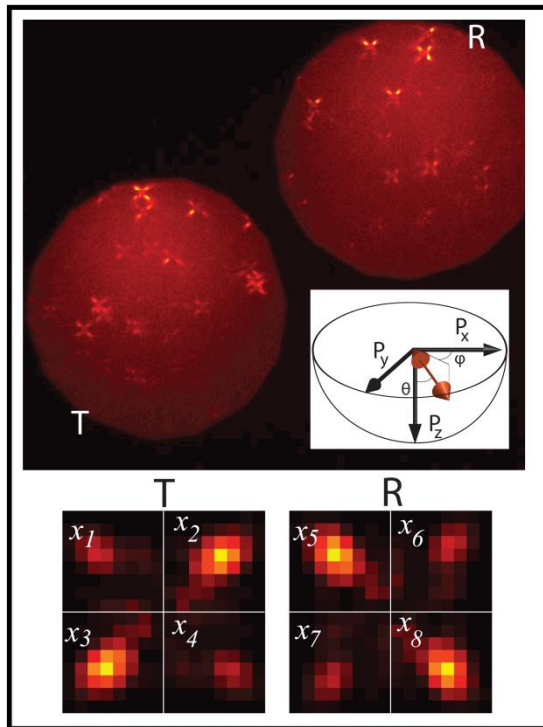


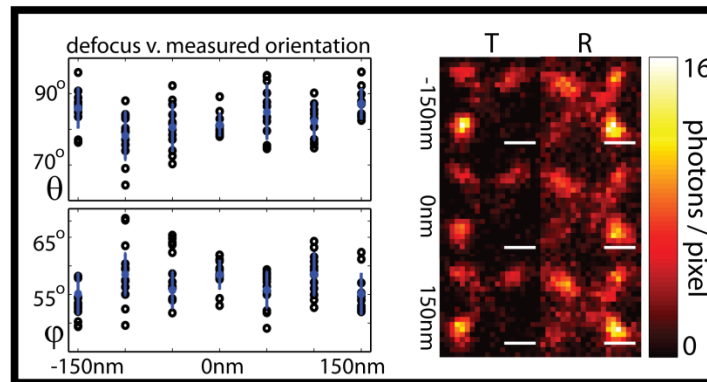
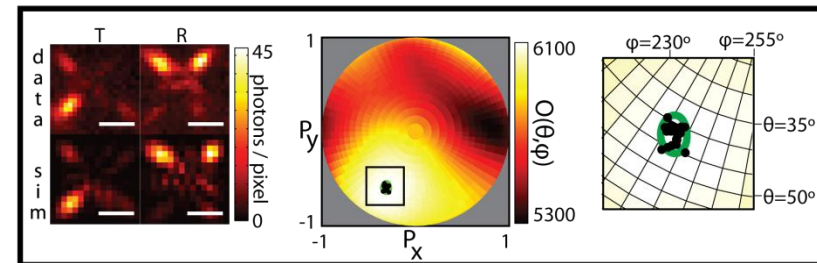
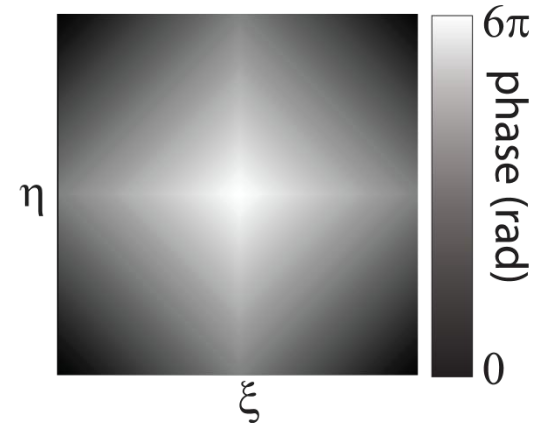
# Single-Molecule Orientation Measurements with a Quadrated Pupil



A 'quadrated pupil' permits the dipole orientation of rotationally fixed fluorescent molecules to be inferred from just one microscope image.



Our method achieves measurement precision of  $1^\circ - 5^\circ$  in both polar and azimuthal orientation



We demonstrate our technique to be robust to defocus aberration