# Single atoms in optical tweezer arrays

Optical tweezers are focused laser beams, which can be used to hold single atoms. We produce arrays of such tweezers, which are loaded randomly (50/50) with either zero or one atom. We then take images of such single-atom arrays using a digital (CCD) camera. Not surprisingly, the signals from single atoms are weak and so the images look noisy.

In this project you analyze such noisy images, and aim to determine (in an automated way) which tweezers contain an atom, and which are empty. This may involve background subtraction, fitting, averaging, etc. Finally, you can also quantify the fidelity of these assessments, meaning how likely it is that the decision filled/empty is correct.

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