Fourier reconstruction in diffraction tomography with an arbitrarily rotated object

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We consider 3D imaging by means of optical diffraction tomography. During the experiment, the μm-sized object is trapped and moved using optical or acoustical tweezers. In the present mathematical studies, we assume that the motion has been determined already beforehand, but can be rather irregular. This makes the derivation of reconstruction formulae as well as the numerical solution a challenging task. Based on the Fourier diffrection theorem, we present an algorithm for 3D visualization of a single rigid object rotating around its center of mass.