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The Computer Generation of Holographic Optical Tweezers MICHAEL DECEGLIE, RODD PRIBIK, JEREMY LYON, KERRY BROWNE, Dickinson College — Due to their ability to apply forces on a small scale, optical tweezers are useful for a variety of biological and physical applications. The utility of optical tweezers can be extended by producing multiple traps with different characteristics from a single beam. One method for achieving this is to manipulate the phase of a trapping laser's wave front with a computer generated kinoform displayed on a spatial light modulator. We compare the performance of two algorithms for kinoform calculation, a Gerchberg-Saxton algorithm and a direct search algorithm, and discuss how they address problems inherent to computer generated holographic optical tweezing.

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