

Abstract Submitted  
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**2D Holographic optical lattices for single atoms manipulation** LUCAS BEGUIN, ALINE VERNIER, THIERRY LAHAYE, ANTOINE BROWAEYS, Laboratoire Charles Fabry — Two-dimensional lattices of single atoms are a promising environment allowing fine control of the atomic interactions in a mesoscopic ensemble. We propose an experiment to study the long range dipole-dipole interactions in the system working in the Rydberg blockade regime. The versatility of holographically generated 2D arrays of single atoms should allow us to achieve arbitrary geometries as well as site-to-site addressability, thus enabling the tunability of the interactions within the system.

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