Proliferation of phase defects in a 3D array of Bose-Einstein condensates

SHIHKUANG TUNG, JILA, GIACOMO LAMPORESI, VOLKER SCHWEIKHARD, ERIC CORNELL — Bose-Einstein condensates are loaded into a 3D optical lattice. A large lattice spacing of 4-5 µm allows us to have a 3D BEC array with hundreds of atoms in each site. By controlling the optical power of the lattice, we are able to fine tune the tunneling of the atoms between lattice sites. The critical temperature and the proliferation of phase defects in the 3D array of BECs are studied.