Visualization of 3D optical lattices HOSEONG LEE, JAMES CLEMENS, Miami University — We describe the visualization of 3D optical lattices based on Sisyphus cooling implemented with open source software. We plot the adiabatic light shift potentials found by diagonalizing the effective Hamiltonian for the light shift operator. Our program incorporates a variety of atomic ground state configurations with total angular momentum ranging from $j = 1/2$ to $j = 4$ and a variety of laser beam configurations including the two-beam lin⊥lin configuration, the four-beam umbrella configuration, and four beams propagating in two orthogonal planes. In addition to visualizing the lattice the program also evaluates lattice parameters such as the oscillation frequency for atoms trapped deep in the wells. The program is intended to help guide experimental implementations of optical lattices.

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