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Phase-matched scattering from an atomic array[1] HIKARU TAMURA, HUY NGUYEN, PAUL BERMAN, ALEX KUZMICH, Univ of Michigan - Ann Arbor — We investigate phase-matched scattering from an array of atoms that are confined in optical tweezers in one- and two-dimensional geometries. For a linear chain, we observe phase-matched reflective scattering in a cone about the symmetry axis of the array that scales as the square of the number of atoms in the chain. For two linear chains of atoms, the phase-matched reflective scattering is enhanced or diminished as a result of Bragg scattering. Such scattering can be used for mapping collective states within an array of neutral atoms onto propagating light fields and for establishing quantum links between separated arrays.

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