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Investigation of atom and photon transport in optical lattices using intensity correlation measurement[1] MATTHEW BRIEL, SAM BISH, BEN AGYARE, SAMIR BALI, Miami University — An optical lattice consists of cold atoms trapped and organized in crystal-like fashion in a periodic structure of potential wells induced by the interference of several laser beams. We describe how intensity correlation measurement of the light scattered from laser-cooled atoms (at temperatures of a few microKelvin) may be used as a sensitive indicator of radiation trapping in the cold atomic sample, and also as a non-invasive probe of the atomic transport between adjacent potential wells of the optical lattice. Experimental progress is reported.

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