

Abstract Submitted
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Nanoscale Resolution Fluorescence Using Cold Atoms DENIZ YAVUZ, NICHOLAS PROITE, University of Wisconsin - Madison — We suggest a new type of scanning fluorescence microscope that is capable of resolving nanometer size objects in the far field. The key idea is to use a position dependent Stark Shift of a Raman transition to produce atomic excitation tightly confined to nanometer spatial scales. We present numerical simulations that demonstrates a resolution that is 40 times smaller than the wavelength of light. We discuss in detail a possible first experiment where a nanoscale object is embedded in an ultracold atomic cloud and a high resolution image is obtained at the far field.

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