Abstract Submitted
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Resonant electric dipole-dipole interactions between cold Rydberg atoms in a magnetic field[1] KOUROSH AFROUSHEH, University of Waterloo, PARISA BOHLOULI-ZANJANI, JEFFERY CARTER, ASHTON MUGFORD, JAMES D. D. MARTIN, University of Waterloo — Laser cooled Rb atoms were optically excited to $46d_{5/2}$ Rydberg states. A microwave pulse transferred a fraction of the atoms to the $47p_{3/2}$ Rydberg state. The resonant electric dipole-dipole interactions between atoms in these two states were probed using the linewidth of the two-photon microwave transitions $46d_{5/2}$ – $47d_{5/2}$. The presence of a weak magnetic field (roughly 1 G) reduced the observed line broadening, indicating that the interaction is suppressed by the field. The field removes some of the energy degeneracies responsible foe the resonant interaction, and this is the basis for a quantitative model of the resulting suppression. A technique for the calibration of magnetic field strengths using the $34s_{1/2}$ – $34p_{1/2}$ one-photon transition is also presented.

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