



PHYSICS COLLOQUIUM

Long Range Interactions Between Rydberg Atoms



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Host: Walker

Abstract: Interactions between Rydberg states of neutral atoms are a promising approach for fast and long range quantum gates. We have demonstrated that a single Rydberg excited Rb atom blocks excitation of a second atom located more than 10 microns away. The observed probability of double excitation of $< 20\%$ is consistent with a theoretical model of the Rydberg interaction. Progress towards using blockade to demonstrate a quantum CNOT gate with neutral atoms as well as ideas for creating multiqubit entanglement will be presented.

2241 Chamberlin Hall • Friday, January 30, 2009 • 4:00 P.M.
cookies & coffee served at 3:30 p.m.