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Microwave Spectroscopy of a Frozen Rydberg Gas¹ EDWARD SHUMAN, PAUL TANNER, TOM GALLAGHER, University of Virginia — In cold Rydberg atom samples the dipole-dipole interaction can lead to many interesting dynamic processes. In particular it can lead to atomic motion, spontaneous ionization, and even plasma formation. Here we present microwave spectroscopy of the dipole-dipole interaction in a frozen Rydberg gas. In particular we create a dense gas of 300 μ K of $n \sim 40$ ^{85}Rb atoms. We then use microwave spectroscopy to probe the dynamics of the Rydberg atoms.

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