

NEARLY TWO-DIMENSIONAL ULTRACOLD PLASMAS

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Fluorescence and absorption measurements of ions in ultracold neutral plasmas complement one another. Both offer insights into the dynamics of expanding, untrapped, strongly-coupled Coulomb systems, and both techniques have unique strengths. We use both methods to characterize quasi-two-dimensional ultracold plasmas and Rydberg systems, and infer strong coupling in plasma ions based on these measurements. These measurement techniques also allow us to probe the Rydberg-to-plasma transformation and the plasma expansion at early times. I will present recent measurements from our laboratory, mention some differences between absorption and fluorescence measurements, and relate this work to a plasma expansion model.