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Electon oscillation damping in ultracold plasmas[1] WEI-TING CHEN, JACOB ROBERTS, Colorado State University — By applying sharp electric field pulses to an ultracold plasma (UCP), it is possible to induce an electron center-of-mass oscillation around the ion center-of-mass. This oscillation damps at a rate that is dependent on UCP parameters such as electron temperature, UCP charge neutrality, electron density, and others. By tuning the experimental parameters of the UCP carefully, the main contribution to the damping rate is electron-ion collisions. Thus, the electron-ion collision rate can be studied in these systems. Our recent experimental results are reported, as well as our plans to extend these measurements further towards a more strongly-coupled electron component regime.

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