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Observation of polaron-to-polaron transitions in the radio-frequency spectra of a quasi-two-dimensional Fermi gas YINGYI ZHANG, WILLIE ONG, ILYA ARAKELYAN, Duke University, NC State University, JOHN THOMAS, NC State University — We measure radio-frequency spectra for a two-component mixture of a ^{6}Li atomic Fermi gas in a quasi-two-dimensional trapping potential. We study the many-body regime, where the Fermi energy is comparable to the energy level spacing in the tightly confined direction. BCS theory predicts that the spectra should be determined by dimer transitions. Well below the Feshbach resonance, we observe spectra due to molecular dimers. However, near the Feshbach resonance, we find that the observed resonances do not correspond to the predicted transitions between confinement-induced dimers. Instead, the spectra appear to be well-described by transitions between noninteracting polaron states in two dimensions.

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