Effective Field Theory Description of Two-Body Resonance States[1] JABER BALALHABASHI, Univ of Arizona — The quantum-mechanical scattering of two particles around a resonance state appears in many areas of physics, for example in cold atoms near narrow, low-lying Feshbach resonances. We construct [?] an EFT that describes such scattering with contact, derivative interactions. We demonstrate that a careful choice of leading- and next-to-leading-order terms in an effective Lagrangian gives rise to a systematic expansion of the T matrix around the resonance, with controlled error estimates. We compare phase shifts and pole positions with those of a toy model. We are extending our EFT to include Coulomb interactions with the goal of describing nuclear resonances, such as those appearing in the scattering of alpha particles.

[1]J. Balalhabashi, S. Fleming, S. Sen and U. van Kolck, Two-Body Resonances with Effective Field Theory, in preparation.

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