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Feshbach physics in a one-dimensional optical lattice NICOLAI NYGAARD, RUNE PIIL, KLAUS MØLMER, Lundbeck Foundation Theoretical Center for Quantum System Research, Department of Physics and Astronomy, University of Aarhus — We consider a pair of atoms in a one-dimensional optical lattice interacting via a Feshbach resonance. Using a two-channel description of the resonance, we derive the analytic form of the Fano scattering resonance inside the continuum band and the discrete bound states outside the band. We suggest experiments to probe and utilize the special properties of the system, which arise from the continuum having an upper edge.

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