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Avalanche Mechanism for Multiple Atom Loss near an Efimov Atom-Dimer Resonance ERIC BRAATEN, DANE SMITH, Ohio State University — Three-body recombination in ultracold trapped atoms produces an energetic atom and dimer that can escape from the trap. If the scattering cross sections are sufficiently large, rescattering of the escaping atoms and dimer can create an avalanche of lost atoms. As shown by Zaccanti et al., this mechanism can be enhanced by the existence of an Efimov trimer near the atom-dimer threshold. We use Monte Carlo methods to generate cascades initiated by recombination events. The energy dependence of the universal atom-dimer cross section associated with a large scattering length is fully taken into account. Every atom in the cascade either escapes or remains trapped, in which case its energy is eventually converted into heat. We calculate the average number of atoms lost and the heat produced by the avalanche mechanism as functions of the atom-atom scattering length. The existence of an Efimov trimer near the atom-dimer threshold can produce a relatively narrow peak in the atom loss rate.

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