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Convectons EDGAR KNOBLOCH, University of California, Berkeley, ORIOL BATISTE, Universitat Politècnica de Catalunya, Barcelona, Spain — Simulations of ^{3}He-^{4}He mixtures with a negative separation ratio in two-dimensional containers, heated from below, with realistic boundary conditions and moderately large aspect ratio reveal, at supercritical Rayleigh numbers, the existence of 'convectons', i.e., localized states of stationary convection, separated by regions of no convection (O. Batiste and E. Knobloch, Phys. Fluids 17, 064102, 2005). These states exist over a well-defined range of Rayleigh numbers, and different numerically stable convectons may exist at fixed parameter values. When the Rayleigh number is reduced the convectons shrink by eliminating rolls at the edges; if the Rayleigh number is reduced too far no stable convectons are present and the convecton decays to the conduction state before a new convecton regrows in its place. Similar behavior occurs with periodic boundary conditions in the horizontal. The origin and properties of these states will be described.

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