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Spatially localized patterns in 2D and 3D doubly diffusive convection CEDRIC BEAUME, ALAIN BERGEON, IMFT (France), EDGAR KNOBLOCH, Department of Physics, UC Berkeley, IMFT (FRANCE) TEAM, DEPARTMENT OF PHYSICS, UC BERKELEY TEAM — Doubly diffusive convection, that is, convection driven by a combination of concentration and temperature gradients, is known to display a wealth of dynamical behavior whose properties depend on the gradients. In the present work, we first investigate spatially localized states in two-dimensional horizontal thermosolutal convection with no-slip boundary conditions at top and bottom and vertical gradients of temperature and concentration. Numerical continuation demonstrates the formation of stationary convectons in the form of 1-pulse and 2-pulse states of both odd and even parity while time integration reveals the presence of stable time dependent spatially localized states. We next turn to large scale three-dimensional vertical enclosures placed in horizontal thermal and solutal gradients. Different types of spatially localized states are computed and the results related to the presence of homoclinic snaking.

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