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Localized structures in two-dimensional rotating convection CEDRIC BEAUME, ALAIN BERGEON, IMFT, Universite de Toulouse (France), HSIEN-CHING KAO, EDGAR KNOBLOCH, Department of Physics, UC Berkeley, TOULOUSE TEAM, BERKELEY TEAM — Geophysical flows exhibit localized structures such as cyclonic and anticyclonic vortices. We consider here convection in a two-dimensional fluid layer with stress-free fixed temperature boundaries rotating uniformly about the vertical [1], and focus on steady spatially localized structures called convectons. These solutions are of two types, odd and even parity, and are found in both subcritical and supercritical regimes [2]. We describe the properties of these convectons and use numerical continuation in a periodic domain to show that the convecton branches exhibit behavior known as slanted snaking. The results are compared to weakly nonlinear theory [2,3].

[1] G. Veronis, J. Fluid Mech. 5, 401435 (1959)
[2] C. Beaume et al., preprint submitted to J. Fluid Mech. (2012)
[3] S. M. Cox and P. C. Matthews, Physica D 149, 210229 (2001)

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