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Supergranules – The True Nature of Solar Rossby Hills? PETER WILLIAMS, MANFRED CUNTZ, University of Texas at Arlington, DAVID HATHAWAY, NASA Marshall Space Flight Center — Supergranulation is a well established component of solar convection and visible on the solar surface as cellular structures. The convective upflow within a supergranule cell overshoots the equilibrium solar surface creating a corrugated surface. The hills associated with these upflows have been detected as they pass over the solar limb. Their discovery was initially attributed to Rossby waves, arising from r-mode oscillations in the Sun where the Coriolis force acts as a restoring force on internal gravity waves. We analyze these hills by producing an artificial height map derived from the radial component of supergranule Doppler velocity data constructed from the spectral components of a synthetic photospheric convection spectrum. We are able to show that the observed signals leading to the detection of these solar hills can be modeled by applying the same methods that lead to the Rossby wave ‘discovery’, prompting the conclusion that the corrugation has its origins in supergranulation.

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