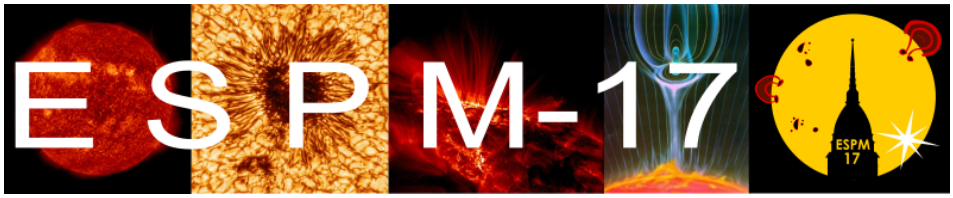

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Restructuring of magnetic fields at the periphery of granules

Monday, 9 September 2024 17:00 (15 minutes)

Plasma flows in the near-surface region are thought to play an important role in replenishing the quiet Sun magnetic field. The interaction of magnetic fields with the complex flow structure causes these fields to reorganize at sub-granular scales. Horizontally aligned vortex flows near the edge of solar granules can grab magnetic fields from beneath and bring them to the visible surface. However, it is still unclear if these magnetic fields are amplified during their motion through such a turbulent environment. Here, we present results from a recent high-resolution radiative magnetohydrodynamic simulation carried out using the CO5BOLD code, focusing specifically on the periphery of granules. We investigate the formation and evolution of coherent vortex structures in these regions to determine if they contribute to amplifying the magnetic field to levels observable on the quiet Sun.

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