

Observational Evidence for Magnetic Flux Submergence in Flux Cancellation Sites

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To investigate whether magnetic flux rises up or sinks down in flux cancellation sites, we have analyzed two canceling magnetic features in the active region NOAA 10043 that was observed on 2002 July 26 with the Advance Stokes Polarimeter mounted on the Vacuum Tower Telescope at the National Solar Observatory/Sac Peak. From the spectral profiles of the Stokes parameters I, Q, U and V, it is found that magnetic field is almost horizontal, and plasma moves down at a speed of about 1 km/s near the vicinity of polarity reversal where flux cancellation proceeds. This result is direct observational evidence that magnetic flux submerges at these sites of flux cancellation.