

Inferring plasma flow velocities from photospheric vector magnetic field observations

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The amount of emergence and submergence of magnetized plasma through the photosphere might be crucial for understanding the solar coronal dynamics. Unfortunately, the emerging flux cannot be measured directly since it is too small to produce measurable doppler-shifts. We compare three methods to estimate the photospheric flow from magnetic field observations. The methods are tested using photospheric vector magnetic field data of active regions, observed by the Huairou Solar Observing Station of the National Astronomical Observatories of China.