



Spectroscopic analysis of interaction between an EIT wave and a coronal upflow region

F. Chen, M. D. Ding, P. F. Chen, L. K. Harra

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We report a spectroscopic analysis of an EIT wave event that occurred in active region 11081 on 2010 June 12 and was associated with an M2.0 class flare. The wave propagated near circularly. The south-eastern part of the wave front passed over an upflow region nearby a magnetic bipole. Using EIS raster observations for this region, we studied the properties of plasma dynamics in the wave front, as well as the interaction between the wave and the upflow region. We found a weak blueshift for the Fe XII $\{\lambda\}$ 195.12 and Fe XIII $\{\lambda\}$ 202.04 lines in the wave front. The local velocity along the solar surface, which is deduced from the line of sight velocity in the wave front and the projection effect, is much lower than the typical propagation speed of the wave. A more interesting finding is that the upflow and non-thermal velocities in the upflow region are suddenly diminished after the transit of the wave front. This implies a significant change of magnetic field orientation when the wave passed. As the lines in the upflow region are redirected, the velocity along the line of sight is diminished as a result. We suggest that this scenario is more in accordance with what was proposed in the field-line stretching model of EIT waves.

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