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EIT waves and coronal magnetic field diagnostics

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Magnetic field in the solar lower atmosphere can be measured by the use of the Zeeman and Hanle effects. In contrast, the coronal magnetic field well above the solar surface, which directly controls various eruptive phenomena, can not be precisely measured with the traditional techniques. Several attempts are being made to probe the coronal magnetic field, such as force-free extrapolation based on the photospheric magnetograms, gyroresonance radio emissions, and coronal seismology based on MHD waves in the corona. Compared to the waves trapped in the localized coronal loops, EIT waves are the only global-scale wave phenomenon, and thus are the ideal tool for the coronal global seismology. In this paper, we review the observations and modelings of EIT waves, and illustrate how they can be applied to probe the global magnetic field in the corona.

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