

Observations and Modelling of X6.9-class Flare-induced Vertical Kink Oscillations in a Large-scale Plasma Curtain

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We present rare observations of vertical kink oscillations in a diffused large-scale plasma curtain as observed by SDO/AIA. The X6.9-class flare in active region 11263 on 2011 August 9 triggered a global large-scale disturbance that propagates in a narrow channel above the plasma curtain and creates a low density region that appears as a dimming region. This large-scale propagating disturbance acts as a non-periodic driver that interacts asymmetrically and obliquely with the top of the plasma curtain and triggers the transverse oscillations. In the deeper layers of the curtain, we find evidence of vertical kink oscillations with two periods (795 s and 530 s). On the magnetic surface of the curtain where the density is inhomogeneous due to coronal dimming, non-decaying vertical oscillations are also observed (period ≈ 763 -896 s). Using 3D MHD model, we reproduce the details of the vertical oscillations and study the process of their excitation by a nonlinear fast magnetosonic pulse.