[포SE-44] Numerical simulations of the vertical kink oscillations of the solar coronal loop with field aligned flows.

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Recent observations by Hinode show weakly-attenuated coronal loop oscillations in the presence of background flow (Ofman & Wang 2008, A&A, 482, L9). We study the vertical kink oscillations in solar coronal loops, considering field aligned flows inside the loops as well as surrounding the loops environment. The two dimensional numerical model of straight slab is used to explore the excitation and attenuation of the impulsively triggered fast magnetosonic standing kink waves. A full set of time dependent ideal magnetohydrodynamics equations is solved numerically taking into account the value of flow of the order of observed flows detected by SOT/Hinode. We find that relaxing the assumption of the limited flows within the loops enhances the damping rate of the fundamental mode of the standing kink waves by 2 - 3 % as compared to flow pattern which is basically localized within the loops. We further notice that extending the flow pattern beyond the loop thickness also enhances the strength of the shock associated with slow magnetoacoustic waves, recognized as an addition feature detected in the numerical simulation. The wider out-flow pattern destroys the oscillation patterns early as compared to narrower flow pattern, in other words we can say that it affects the durability of the oscillation. However, for the typical coronal loops parameters we find that the observed durability periods of the SOT/Hinode observation can be achieved with an out-flow Gaussian patterns for which half-width is not greater than factor 2.0 of the loop-half-width. explain a possible relation between electric current structure and sigmoid observed in a preflare phase.

[포SE-45] Distributions of Mean Particle Size and Age on the Lunar Surface

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We measure the degree of polarization of the lunar regolith to map the distributions of the age and the particle size. We use a 12cm refracting telescope with a 2k-square pixel color CCD (R band) and a polarization filter. The angular resolution obtained is 3.02 km/pixel. Our goal is to obtain a map of the lunar particle size distribution on the lunar regolith and then that of the age distribution. Polarization of the light scattered by lunar surface contains information on their mean particle size. The mean particle size of the lunar surface has been decreased by continued micro-meteoroid impact over a long period. One can estimate the age of the lunar surface if the mean particle size is known. Particle sizes can be measured through observations of polarization because the mean particle size is related to the maximum polarization and albedo. The age and the particle size of the lunar regolith can give vital information for the future lunar exploration.