

**Abstract Template for 1<sup>st</sup> Asia-Pacific Conference on Plasma Physics**Name<sup>1</sup>, Name<sup>2</sup>, ---<sup>1</sup> AAPPS, Postech, Korea, <sup>2</sup> AAPPS-DPP, Kyoto University, Japan

## Abstract

Large-amplitude longitudinal oscillations in solar filaments have been observed for decades. They were also extensively investigated via numerical simulations, mainly in 1-dimension. Following previous works, we intend to investigate the properties of the filament longitudinal oscillations in a two-dimensional configuration.

We perform numerical simulations with a weakly dipped magnetic field under the presence of gravity. The filament is placed into the dip and an initial velocity perturbation is given onto the filament. The results indicate that the period of the oscillation agrees with previous 1D simulations, while the damping timescale is somewhat smaller compared to 1D simulations. The deviation increases as the plasma beta becomes larger. It is suggested that wave leakage is an important mechanism for filament longitudinal oscillations when the magnetic field is moderate or weak.

## References

- Luna, M., Terradas, J., Kholenko, E., Collados, M., & Vicente, A. de. 2016, ApJ, 817, 157  
Zhang, Q. M., Chen, P. F., Xia, C., Keppens, R., & Ji, H. S. 2013, A&A, 554, A124  
Zhou, Y.-H., Zhang, L.-Y., Ouyang, Y., Chen, P. F., & Fang, C. 2017, ApJ, 839, 9