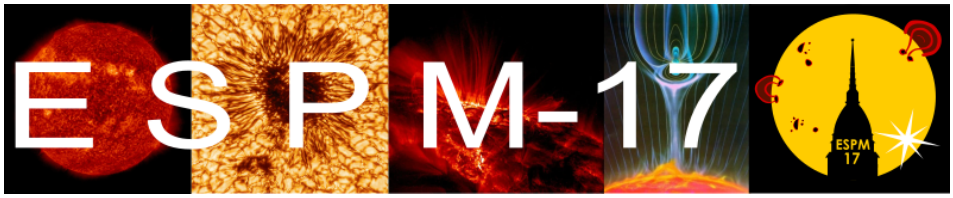

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Characteristics and Energy Flux Distributions of Decayless Transverse Oscillations in Different Coronal Regions

Lim et al. (2023) have recently proposed that the slope (δ) of the power law distribution between the energy flux and oscillation frequency could determine whether high-frequency transverse oscillations give a dominant contribution to the heating (δ<1). Using the meta-analysis of decayless transverse oscillations, it has been found that high-frequency oscillations could play a key role in heating the solar corona. We aim to investigate how (whether) the distributions of the energy flux contained in transverse oscillations and their slopes are influenced by different coronal regions. An analysis of transverse oscillations from 41 quiet Sun (QS) loops and 22 active region (AR) loops observed by SolO/EUI HRIEUV is performed. The energy flux and energy are estimated using analysed oscillation parameters and loop properties, such as periods, displacement amplitudes, loop lengths, and minor radii of the loops. It is found that about 71% of QS loops and 86 % of AR loops show decayless oscillations. We find that the amplitude does not change depending on different regions, but the difference in the period is more pronounced. Although the power law slope (δ=-1.79) in AR is steeper than that (δ=-1.59) in QS, both of them are less than the critical slope of 1. High-frequency transverse oscillations could play a more significant role than low-frequency oscil lations in heating the QS and AR respectively.

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