

M40a Solar p-mode as an additional energy source for coronal heating

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It is widely accepted that Alfvénic waves generated by granulation are the dominant energy carrier for the solar coronal heating. Additionally, p-modes excite acoustic waves into the upper atmosphere, although their contribution to the coronal heating has been ignored because they are believed to steepen into shocks rapidly before reaching the corona. However, observations found that the coronal Alfvénic energy flux show an enhancement of power at around 3 mHz. This power peak suggests that they originate from p-modes, whereas there is still no theoretical model to prove that the p-mode-driven waves can transfer their energy to the coronal Alfvénic waves before being dissipated. Therefore, we aim to investigate the propagation mechanism of the p-mode-driven waves into the corona by using a numerical model, including from the upper convection zone to the corona. To reproduce the p-mode oscillation, acoustic fluctuations in the convection zone are imposed. Consequently, we have revealed that the p-mode-like oscillations contribute to the coronal Alfvénic power around 3 mHz due to the mode conversion from acoustic to Alfvénic waves.