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Coherent structures of kinetic Alfven wave to study solar wind at 1AU

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Alfvén waves are fundamental low frequency electromagnetic plasma wave that permeate the universe. At small kinetic scale these waves known as kinetic Alfvén waves and at this scale these waves transfer the energy between electromagnetic fields and charged particle in solar wind [1]. I study the kinetic Alfvén waves in solar wind at 1AU, when the background plasma density is modified by parallel ponderomotive force and Joule heating. Numerical method has been used to analyse the evolution of KAW coherent structures in solar wind at 1AU [2]. These coherent structures at kinetic scale follow Kolmogorov scaling in inertial range [3]. Steepened spectrum has been achieved in the dispersive range, which is continues in the dissipation range. Our obtained results reveal that the coherent structures of kinetic Alfvén waves plays an important role for transferring the energy from larger length scales to smaller length scales in solar wind at 1AU.

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