

# The anomaly heating of corona by turbulence driven waves

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# The abnormal heating of corona by turbulence Alfvén waves

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Abstract Alfvén waves propagate along both feet of arch magnetic line of force toward the top of coronal loop. When both ways of Alfvén waves in opposite direction meet at the top, a strong instability can be created and a turbulence Alfvén waves can be excited. As the phase velocity of turbulence Alfvén waves is close to the thermal velocity of particles, the waves' energy can largely be absorbed by particles, the temperature in turbulence region will sharply be increased by the collisionless turbulence stochastic heating from Landau damping. When plasma pressure parameter  $\beta$  satisfies certain condition, a solitary kinetic Alfvén waves (SKAW) can be excited. Its effect in heating is even more notable. The temperature at the top of coronal loop will rapidly rise.

Key words: Corona, Alfvén waves, collisionless turbulence heating, Landau damping.