

# On the Ion Temperature Distributions in the Solar Wind at 1 AU and their Relationship with Kinetic Instabilities

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**Abstract:** The solar wind is the only low-collisional plasma accessible to humans for *in-situ* observations through satellites. The measured temperature anisotropies of the different charged components of the solar wind exhibit boundaries with an inverse correlation with respect to each of the species plasma betas [1,2]. The excess of temperature anisotropies and other free-energies are believed to be regulated by locally excited kinetic instabilities. However, most studies do not consider the effects of minor heavy ions in the stability of ion-cyclotron waves [3]. In this work, the combined constraints in the plasma beta and temperature anisotropy distribution, of both alpha particles and protons, are revisited by comparing WIND/SWE data measurements, and results from the theoretical kinetic instabilities arising in presence of alpha particles.

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## References:

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