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Electron Anisotropy Constraints in the Solar Wind

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We present a study of the solar wind electron anisotropy using data from the WIND/SWE-VEIS and the CLUSTER/PEACE electron spectrometers in the ecliptic plane at 1AU. Our study focused in the mechanisms that control the electron anisotropy in the solar wind, which are still not well understood. We investigated the electron anisotropy as a function of two important parameters: the electron parallel plasma $\beta_{e||}$ and the electron collisional age A_e (defined as the number of collisions suffered by an electron during the expansion of the solar wind). The goal is to check whether the electron anisotropy is constrained by some instability (e.g., the whistler instability) or is limited by collisions. The electron temperature anisotropy is determined by moments of the velocity distribution functions (VDF) and/or by fitting the electron VDF using a superposition of a bi-Maxwellian core distribution and a bi-Kappa halo distribution.