



專題演講

Radial Variations of Outward and Inward Alfvénic Fluctuations Based on Ulysses Observations

Speaker : **Lei Yang**

Purple Mountain Observatory, Chinese Academy of Sciences, China

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Place : 健雄館(科四館) S4-811 教室

摘要 / Abstract :

Ulysses magnetic and plasma data are used to study hourly scale Alfvénic fluctuations in the solar polar wind. The calculated energy ratio R_{in}^2 (cal) of inward to outward Alfvén waves is obtained from the observed Walén slope through an analytical expression, and the observed R_{in}^2 (obs) is based on a direct decomposition of original Alfvénic fluctuations into outward- and inward-propagating Alfvén waves. The radial variation of R_{in}^2 (cal) shows a monotonically increasing trend with heliocentric distance r , implying the increasing local generation or contribution of inward Alfvén waves. The contribution is also shown by the radial increase in the occurrence of dominant inward fluctuations. We further pointed out a higher occurrence ($\sim 83\%$ of a day in average) of dominant outward Alfvénic fluctuations in the solar wind than previously estimated. Since R_{in}^2 (cal) is more accurate than R_{in}^2 (obs) in the measurement of the energy ratio for dominant outward fluctuations, the values of R_{in}^2 (cal) in our results are likely more realistic in the solar wind than those previously estimated as well as R_{in}^2 (obs) in our results. The duration ratio RT of dominant inward to all Alfvénic fluctuations increases monotonically with r , and is about two or more times that from *Voyager 2* observations at $r \geq 4 \text{ au}$. These results reveal new qualitative and quantitative features of Alfvénic fluctuations therein compared with previous studies and put constraints on modeling the variation of solar wind fluctuations.

※歡迎聽講※

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