

The scientific motivation of the chromospheric Ly-alpha spectropolarimeter

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Abstract

The aim of this short contribution is to inform the Spanish Society of Astronomy about the theoretical background and scientific motivation for the Chromospheric Lyman-alpha Spectropolarimeter (CLASP), whose goal is to open up a diagnostic window for magnetic field measurements in the outer solar atmosphere. CLASP is an experiment for measuring the scattering polarization of the hydrogen Ly-alpha line using a FUV telescope and a high-sensitivity spectropolarimeter carried by a NASA sounding rocket. This project was initiated as a collaboration between Japan, USA and Spain and it is presently under development including also other European teams. The hydrogen Ly-alpha line at 1215 Å originates in the enigmatic transition region of the outer solar atmosphere, where the temperature suddenly jumps from $< 10^4$ K to $> 10^6$ K and the plasma changes from partially to practically fully ionized. In order to understand how this can be possible it is crucial to determine the strength and geometry of the magnetic field in the plasma of the chromosphere-corona transition region, whose primary emission is in the FUV and EUV spectral regions. The interested reader will find information on the theoretical background and scientific motivation for this and future space missions in the references.

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References

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