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Waves reflection linked with FIP bias

The chemical properties of the solar plasma remain unchanged as it travels unadulterated along open fields from the chromosphere/corona into the heliosphere and can be used as a tracer for the sources of the solar wind.

The solar corona should have the same chemical composition as the solar photosphere. However, It has been found that in the corona, some solar regions exhibit a different chemical composition compared to the lower atmosphere, known as the FIP effect.

For the first time, using spectropolarimetric data from the chromosphere we were able to detect wave reflection, linked with a strong coronal FIP bias, as predicted by the theory.

Unveiling solar wave characteristics from polarimetric measurements still represents a challenge. This detection has been accomplished using phase lag analysis on ground-based chromospheric Stokes V parameters. Using the same theoretical model proposed in 2004 and modified over these 20 years, we found good agreement with the observed results.

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