

Strong Blue Asymmetries in IRIS Line Profiles: Identifying Heliospheric Tributaries

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We identify strongly blue-shifted asymmetries in the FUV and NUV line spectra of the magnetized chromosphere and transition region as observed by IRIS. We demonstrate the spatial and temporal dependence of these asymmetries in addition to their characteristic appearance in the optically thick MgII and optically thin Si IV lines. These asymmetries unequivocally correspond to (Type II) spicules and associated phenomena observed by IRIS and Hinode. Further, on many occasions, these asymmetries have coronal counterpart emission that are readily observed by Hinode and SDO/AIA and are tributaries to the outer solar atmosphere. These complex spectra at the root of the heliosphere require high-level data analysis, and possibly point to a much more complex magneto-thermal interface to the corona and heliosphere than we might have thought before the launch of IRIS. We discuss points of exploration for any Hinode follow-on mission.