Study of a X-ray Jet and Bright Point Characteristics in Polar Coronal Hole Region

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High spatial and temporal resolution observations of the quite Sun transition region and corona in a polar coronal hole show a dynamical environment where bright points, mass flows and jets are commonly observed. We present a study of a polar jet and a related bright point observed on 15^{th} April 2007 with a combination of imaging and spectroscopic instruments on board SoHO (CDS) and Hinode (XRT, EIS). We measure the jet parameters, e.g. length, width, life time and propagation speed. The evolution of the jet and corresponding bright point is observed in X-ray images taken by XRT/Hinode. A portion of the jet is also detected by EIS/Hinode slot images. CDS/SoHO pointed to the region near the foot point of the jet. Using different methods, the measured average jet speed is estimated to be around 160 km s⁻¹. The observation supports the scenario of magnetic reconnection between the emerging flux and ambient open field in the polar coronal hole. We have also identified five X-ray Bright Points (XBP's) within the XRT field of view and have studied their dynamics. We applied wavelet analysis on the intensity variations to study the oscillation properties of these XBP's. All the five XBP's identified show intensity oscillations with periods in between 20 to 40 minutes in their light curves with multiple peaks.

Keywords: coronal hole; UV radiation; X-ray; transition region; corona; polar jet; bright point oscillations;

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