

Multiwavelength analysis of the impact polarization of 2001 June 15 solar flare

Z.Xu(1)J.C.Henoux(2)G.Chambe(2)C.Fang(3)

(1)Yunnan Observatory of National Observatories, China (2) LESIA, Observatoire de Paris, France, (3)Nanjing University, China

The linear polarization of $H\alpha$, $H\beta$ and MgI lines have been found during the rise phase of soft X-ray emission of an M6.3 flare on June 15th 2001, observed by THEMIS telescopes in the multi-wavelength spectropolarimetric mode. Here, the linear polarization signals of MgI line (5528 Å) are reported for the first time. The polarization of these three lines has a good spatial correspondence and is located at the edges of flare kernels. The maximum polarization degree of $H\alpha$ and $H\beta$ lines can reach 4% – 6% at the line center and near line wings. For MgI line, the polarization degree can exceed 3.5% concentrating in the line center. Polarization directions are not random but either parallel or perpendicular to the local transverse magnetic field in a large degree. The origin of the observed short-time polarization is discussed here with respect to the bombardment on the solar atmosphere by low-energy protons or high-energy electrons associated with return current.