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IMF-Bz Southward ion dispersions observed by Cluster in the polar cusp

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The Earth's magnetic field is influenced by the interplanetary magnetic field (IMF), specially at the magnetopause where both magnetic fields enter in direct contact and merge through magnetic reconnection. In the polar regions, the polar cusp that extends from the magnetopause down to the ionosphere is also directly influenced. The reconnection not only allow ions and electrons from the solar wind to enter the polar cusp but also give an impulse to the magnetic field lines threading the polar cusp through the reconnection electric field. A dispersion in energy of the precipitating ions is subsequently produced by the motion of field lines and the time-of-flight effect. We will present a cusp crossing where two ion dispersions were observed consecutively on the first two spacecraft and only one on the following two spacecraft, about 10 and 47 min later. In addition the IMF changed from By dominant to Bz dominant when the second dispersion disappeared. Further analysis will be presented to discuss these observations in terms of temporal or spatial changes.