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The HIA instrument on-board the Chinese TC 1 Double Star spacecraft

and its first results in conjunction with the Cluster spacecraft

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The Chinese spacecraft Tan Ce 1 (TC 1), first component of the Double Star mission, has been launched with success on December 29, 2003, in an elliptical orbit of 500 x 66970 kilometers, inclined at 28.5 degrees to the equator. In the framework of the scientific cooperation between the Academy of Sciences of China and ESA, several European instruments almost identical to those developed for the Cluster spacecraft were installed on board this spacecraft.

The HIA (Hot Ion Analyzer) instrument on-board the Tan Ce 1 (TC 1) spacecraft is an ion spectrometer nearly identical to the HIA sensor of the CIS instrument on-board the 4 Cluster spacecraft. This instrument has been specially adapted for TC 1. It measures the 3D distribution functions of the ions between 5 eV/q and 32 keV/q with a high resolution, but without mass discrimination.

TC 1 is like a fifth Cluster spacecraft to study the interaction of the solar wind with the magnetosphere and to study the storms and substorms.

HIA was commissioned in February 2004. Due to the 2 R_e higher apogee than expected, some in-flight improvements were needed in order to use HIA in the solar wind in the initial phase of the mission. Since this period HIA has performed very good measurements in the solar wind, the bow shock, the magnetosheath, the magnetopause, the dayside and nightside plasma sheet, the ring current and the radiation

belts. We will present the first results in coordination with the CIS Cluster measurements. These include for example ion dispersion structures in the solar wind, internal structure of the bow shock, ion beams close to the magnetopause, and plasma sheet thinning events during substorms.