

# Geometrical study of hot flow anomalies aboard Cluster

G. Facskó (1), **K. Kecskeméty** (1), G. Erdős (1), M. Tátrallyay (1), and P.W. Daly (2)

(1) KFKI Research Institute for Particle and Nuclear Physics, H-1525 Budapest, POB 49, Hungary

(2) Max Planck Institute for Solar System Research, Lindau-Katlenburg, Germany

Hot flow anomalies are studied using observations of the RAPID suprathermal charged particle detector, the FGM magnetometer, and the CIS plasma detector aboard the four Cluster spacecraft. The identification of Hot Flow Anomalies (HFAs), discovered nearly 20 years ago near the Earth's bow shock, and their distinction from other events is still not straightforward. We studied previously several specific features of tangential discontinuities on the basis of Cluster measurements in February-April 2003 and estimated the size of the region affected by the HFA in different ways. The flux variations low energy protons and the development of their angular distribution during HFAs as well as the geometry of the region are further examined here to find the details of the acceleration process using data from recent spring periods in 2004-2006 when the Cluster fleet stayed right outside of the bow shock at varying separation distances. The results are confronted with the outcome of recent hybrid simulations. The pressure balance and movement of the boundary layers of these events were studied as well.