



On 3D Reconstruction of Coronal Mass Ejections using SECCHI-COR Data

M. Mierla (1,2), B. Inhester (3), C. Marque (1), L. Rodriguez (1), S. Gissot (1), A. Zhukov (1,4), D. Berghmans (1), and J. Davila (5)

(1) Royal Observatory of Belgium, Brussels, Belgium (marilena@oma.be), (2) Astronomical Institute of the Romanian Academy, Bucharest, Romania, (3) Max-Planck Institute for Solar System Research, K.-Lindau, Germany, (4) Skobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow, Russia, (5) Godard Space Flight Center, USA

The data from SECCHI-COR1 and SECCHI-COR2 coronagraphs onboard STEREO mission which was launched in October 2006 provided us with the first-ever stereoscopic images of the Sun's corona. These observations were found to be extremely useful in reconstructing the 3D structure of coronal mass ejections (CMEs).

We apply four methods for reconstructing the CMEs: 1) Local correlation tracking (to identify the same feature in COR Ahead and COR Behind images) plus tie-point reconstruction technique; 2) Center of mass of the structures along the line of sight (i.e. along each epipolar lines) plus tie-point reconstruction technique; 3) Polarization ratio technique (see for e.g. Moran and Davila 2004); 4) Forward modelling technique (see Thernisien et al. 2006).

The four techniques are applied on three structured CMEs observed by COR1 and COR2 instruments on 15 May 2007, 31 August 2007 and 25 March 2008. A comparison of results obtained from the application of the four reconstruction algorithms is presented and discussed.