



Three-dimensional reconstruction of active regions

L. Rodriguez (1), A. N. Zhukov (1,2), S. Gissot (1), and M. Mierla (1)

(1) Solar–Terrestrial Center of Excellence – SIDC, Royal Observatory of Belgium, Brussels, Belgium (rodriguez@oma.be),

(2) Skobeltsyn Institute of Nuclear Physics, Moscow State University, Moscow, Russia

The STEREO mission provides an unprecedented opportunity to reconstruct the 3D configuration of solar features. In this work, we combine SECCHI/EUVI data from both spacecraft by means of a local correlation tracking method. The technique allows an automatic (without user intervention) matching of pixels in both images. This information is then used to triangulate the 3D coordinates of each pixel. We use the method in order to reconstruct and analyze the 3D structure of active regions. In particular, we focus on the extraction of coronal loop heights, observed nearly simultaneously in the 171, 195 and 284 Å passbands. We compare the properties of loops in the different wavelengths and extract valuable information regarding their geometry. In particular, we demonstrate that some loops that look co-spatial in the 171 Å and 195 Å images have in fact different heights and thus occupy different volumes. Our results have important implications for multi-wavelength studies of coronal loops, especially for calculations using filter-ratio techniques.