



Contribution ID: 306

Type: Poster

Coalignment for a quiet region from two vantage points of SO/PHI and Hinode/SP

In a quiet region, a variety of convection (granulation)-driven phenomena at a tiny spatial scale are observed. For their understanding, it is important to derive the vector of the velocity and magnetic field. One of the effective approaches to study the phenomena is to take advantage of the stereoscopic configuration between Solar Orbiter (SO)/ Polarimetric Helioseismic Imager (PHI) and Hinode/Spectro-Polarimeter (SP), thanks to their high and comparable spatial resolution under the stable observation from the space. Since the spatial scale of the granulation is down to their 1-pixel size, an accurate co-alignment is required. However, several difficulties such as their different pixel sampling, image distortion, different viewing angle, and even different observation instruments (Hinode/SP adopts a slit-based observation while the SO/PHI does a filtergraph) have to be taken in account.

The target region, taken on 10th April 2023, is off disk-center for both instruments with heliocentric angles of 0.79-0.92 for Hinode and Solar Orbiter, respectively, and a separation angle of 63 degrees between the Sun-Hinode and the Sun-SO lines. In the coalignment process, the scaling and offsets in the X- and Y-directions are chosen to find the best correlation. The resulting coaligned-map with spatial size 34" x 76" reaches a correlation coefficient of 0.91. In this presentation, we will discuss the usability of this coaligned-dataset for the purpose of stereoscopic diagnosis of the vector fields of physical quantities in the convection-driven phenomena. In addition, we will discuss the physical origin of the still remained discrepancies seen in this coaligned-map.

Primary authors: CALCHETTI, Daniele (Max-Planck-Institute for Solar System Research); HIRZBERGER, Johann (Max-Planck-Institute für Sonnensystemforschung); BELLOT RUBIO, Luis (Instituto de Astrofísica de Andalucía (IAA-CSIC)); SOLANKI, Sami K. (Max-Planck-Institut für Sonnensystemforschung (MPS), Göttingen, Germany) and School of Space Research, Kyung Hee University, Yongin, Republic of Korea); OBA, Takayoshi (Max-Planck Institute for the solar system research); KATSUKAWA, Yukio (National Astronomical Observatory of Japan)

Session Classification: Coffee break and poster session 1

Track Classification: Energy and mass transfer throughout the solar atmosphere and structures within