



A Correlation Analysis between High-speed Solar Wind Source Regions and Coronal Holes Identified by Different Methods

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There are two definitions of coronal hole. One is that coronal holes are optically low intensity regions on the solar disk, observed from the EUV or the soft X-ray filter; the other one is that coronal holes are regions of fieldlines which extend far into the interplanetary space (also known as open magnetic fluxes). The center of coronal hole is thought to be the source region of high-speed streams. Therefore we estimate the locations of sources of high-speed streams events, and compare them with the locations of coronal holes determined by the two definitions. Coronal holes of the first definition are determined from synoptic maps of SDO/AIA with 193Å; coronal holes of the second definition are determined based on the Potential Field Source Surface (PFSS) model. The high-speed streams events are selected from the ACE/RTSW data. For each event, we trace the particles of high-speed streams back to the solar surface to estimate the position of the source. We check whether or not the central region of a coronal hole corresponds to the source of high-speed streams. Result shows that coronal holes defined by the open magnetic regions have a better agreement to the sources of the high-speed solar wind.