

# **AUTOMATED DETECTION OF CORONAL HOLE BASED ON SOHO/EIT AND SDO/AIA SYNOPTIC MAPS THROUGH SOLAR CYCLES 23 AND 24**

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Coronal holes are regions of open magnetic field lines and the source of fast solar wind. Understanding the evolution of coronal holes is critical for solar magnetism as well as for accurate space weather forecasts. Long-term occurrence of coronal holes gives important information for solar dynamo and space climate studies. Solar wind models are dependent on the size and location of the holes on the solar disk. Coronal holes are best seen in images of coronagraphs at the solar limb. On the other hand, coronal holes are rather difficult to determine on the solar surface, e.g., because they appear differently in different wavelengths. The size, shape, intensity and contrast of any given hole are not the same when using different observing filters.

We study here the synoptic EUV images at different wavelengths of 195/193 Å, 171 Å and 304 Å measured by SOHO/EIT and SDO/AIA instruments. The data covers the solar cycles 23 and 24 (1996.06.28: 2010.05.20). We aim to identify the coronal holes from these images using an automated routine based on the statistical properties of the measured pixel intensities and a dynamical division of images into sub-images. We measure the coronal hole areas, magnetic flux in these holes, and trace their evolutions during solar cycles 23 and 24. We present here the method and the first results obtained for coronal hole properties from these two satellites.