A comparison of void distribution function of two solar minima

stefano scardigli, francesco berrilli, dario del moro, and luca giovannelli
Physics Department, University of Rome Tor Vergata, Rome, Italy

The latest solar minimum, between cycles 23 and 24 had been exceptionally quiet and long lasting. To investigate the difference between the last two minima, we focused on the magnetic patterns on solar surface as recorded by SOHO/MDI high-resolution magnetograms.

We used daily samples of 191 images (August 1996 - February 1997) and 511 images (January 2008 – June 2009) respectively, and considered the void, i.e. magnetic underdense region, distribution function as the indicator of solar activity.

To single out voids and to quantify their intrinsic pattern, we applied a fast circle-packing-based algorithm to the high-resolution magnetograms during the solar activity minima.