



High-resolution maps of the coronal density structure over a solar cycle.

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Qualitative Solar Rotational Tomography (QSRT) is a breakthrough for mapping the coronal density structure. It uses normalized coronagraphic white light images for Fourier backprojection tomography, giving a detailed map of the coronal density structure. A brief description of the technique, and a validation of the results is given. The technique is applied to LASCO/SOHO C2 data covering almost a whole solar activity cycle. The resulting maps are directly constrained by high-resolution coronal data observed at the appropriate height, they provide an estimate of longitudinal density variations, and, applying a 'sliding window' through a large set of observations, give a picture of temporal changes in the large-scale density structure. The maps agree well with estimates of the density distribution estimated using global MHD models. Reasonable agreement with the results of potential field source surface (PFSS) models is found at solar minimum. Outside solar minimum, QSRT maps show large regions of high-density structure not associated with the neutral line found by PFSS. The QSRT maps also show direct evidence of differential rotation in the extended inner corona.