

M39a **Subsurface supergranular dynamics of the Sun's polar regions**

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Processes in the polar regions of the Sun play important role in the solar dynamics and magnetic activity cycles, but because of foreshortening, observing the higher-latitude region from the ecliptic plane is difficult. To overcome the difficulty we have used unique high-resolution observations from Hinode/SOT during the periods of high inclinations of the solar rotation axis to the ecliptic plane. We have investigated the structure and dynamics of subsurface flows in the polar regions by a time-distance helioseismology technique. The Hinode data enabled us to investigate supergranular structures in the regions with up to 80 degrees in latitude. We have found an initial indication that the supergranular cells in the polar region are narrower and deeper than those in the lower-latitude regions. In addition, during some periods, the cells are aligned approximately in a north-south direction in the higher-latitude regions. We discuss properties and temporal evolution of the supergranular structures, as well as the possibilities of measuring the differential rotation and meridional flows in the polar regions, which are critical for the solar dynamo theories.