

LOCAL HELIOSEISMOLOGY

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Helio-seismology is the analysis of the solar oscillations to probe the interior of the Sun. Helioseismology not only provides the most stringent tests of the standard model of solar structure and evolution, it also enables us to study effects beyond the standard model: internal rotation, north-south flows, magnetic fields, and their temporal variations. The search for internal signatures of the eleven-year sunspot cycle is of prime importance in the quest to understand the origin of the solar magnetism. While the global 2D properties of the Sun as a function of radius and latitude are best studied with *global* helioseismology (the study of the frequencies of the normal modes of oscillation), the detailed 3D structure of the solar interior relies on *local* helioseismology (the study of the full wave field at the solar surface). In this talk I will summarize important results of local helioseismology and discuss recent efforts to image convective flows and sunspots in the near-surface layers. Helioseismology is expected to make a lot of progress with the upcoming launch of the Solar Dynamics Observatory (SDO) of NASA, which will complement the observational facilities that are in use today (SOHO, GONG, BiSON).

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