

Plenarvortrag PV X Fr 11:45 HG X und HG Aula
What is wrong with the Sun? The Present and Future of Solar Physics — ●SAMI K. SOLANKI — Max-Planck-Institut für Sonnen-systemforschung

The Sun, usually displaying a range of dynamic and energetic phenomena driven by its complex magnetic field, has gone into an unexpected decline, producing a much longer and quieter minimum of activity than at any time in the last century. This unusual minimum was not predicted and has starkly reminded us just how little we know about the nearest star. The Sun is a giant laboratory at our astronomical doorstep, providing insight into myriad processes acting throughout the universe. In recent years telescopes in space and on the ground have unveiled many of the Sun's secrets. For example, we have learnt that it

is highly dynamic, producing spectacular displays that can affect technical systems on Earth and in space. Yet a number of fundamental aspects remain in the dark, including the causes of the current unusual minimum, awaiting new observational probes. The latest probe of the Sun has been the german-led SUNRISE observatory that flew in June 2009, hanging from a stratospheric balloon at 37km above sea level. It has revealed the Sun's surface with higher fidelity than ever before, leading to new insights into the fine structure and dynamics of the Sun's atmosphere and in particular of its magnetic field. On the horizon are other exciting missions, complementary in their aims and instrumentation. They include the Solar Dynamics Observatory (NASA), Solar Orbiter (ESA), Solar Probe (NASA) and Solar C (JAXA). They promise to open a new golden age of solar physics.