

Session 2

## **The strongest magnetic fields in sunspots and their statistical properties**

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Sunspots are concentrations of magnetic fields on the solar surface. Then, where is the strongest field in each sunspot? It is generally located in an umbra, but sometimes stronger fields are found outside umbrae, such as a penumbra and a light bridge. The formation mechanism of such strong fields outside umbrae is still puzzling. Now we have numerous high-quality datasets taken with the Hinode/Spectro-Polarimeter over 10 years, which motivate us to address this question via a statistical analysis of strongest fields in sunspots. Hence, we compiled a ranking list of active regions by their largest field strengths and investigated conditions for appearance or formation of strong magnetic fields. In this talk, we will discuss the key features to produce strong fields in a statistical sample.