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Magnetic field Fluctuations in Sunspot Umbra in He I 1083 nm

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Oscillations in solar active regions are mainly due to leakage of acoustic oscillations that are trapped inside the Sun. Doppler velocity and intensity measurements are known to clearly show these oscillations in magnetic structures. In recent years, magnetic field fluctuations have been reported in both the photosphere and chromosphere. The reason for these observed oscillations in the magnetic field has been difficult to interpret. In this work, to address this issue, we invert temporal series of sunspot observations in the He I 1083 nm line using HAZEL. The nature and origin of these magnetic field fluctuations are interpreted with the support of numerical simulations.

Primary author: Dr CHITRAPADI RAJARAM, Sangeetha (Instituto de Astrofísica de Canarias)

Co-authors: FELIPE, Tobias (Instituto de Astrofísica de Canarias); GONZÁLEZ MANRIQUE, Sergio Javier (Instituto de Astrofísica de Canarias); ASENSIO RAMOS, Andrés (Instituto de Astrofísica de Canarias)

Presenter: Dr CHITRAPADI RAJARAM, Sangeetha (Instituto de Astrofísica de Canarias)

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