



Contribution ID: 306

Type: Poster

Multi-faceted approach to decomposing and identifying individual magnetohydrodynamic (MHD) wave modes in sunspots

Wednesday, 8 September 2021 15:18 (13 minutes)

High-resolution solar observations show the complex structure of the magnetohydrodynamic (MHD) wave motion. We apply the Proper Orthogonal Decomposition (POD) and Dynamic Mode Decomposition (DMD) techniques to identify the dominant MHD wave modes in a sunspot with a circular cross-sectional shape, using the intensity time series. The POD technique was used to find modes that are spatially orthogonal, whereas the DMD technique identifies temporal orthogonality. Here we show that the combined POD and DMD approaches can successfully show the appearance of both the slow body sausage and kink modes in a sunspot umbra with an approximately circular cross-sectional shape.

Primary author: ALBIDAH, ABDULRAHMAN (The University of Sheffield)

Co-authors: Dr BALLAI, Istvan (The university of Sheffield); Dr FEDUN, Viktor (The University of Sheffield); Dr VERTH, Gary (The University of Sheffield)

Presenter: ALBIDAH, ABDULRAHMAN (The University of Sheffield)

Session Classification: Poster Session 7.3

Track Classification: Session 3 - Fundamental Plasma Processes in the Solar Atmosphere: Magnetic Reconnection, Waves, Emission, Particle Acceleration