



Contribution ID: 121

Type: Oral Presentation

Investigating the solar differential rotation rate by sunspot tracking using terrestrial solar observations.

Wednesday, 5 July 2023 14:20 (20 minutes)

The Centre for Space Research (CSR) at the North-West University (NWU), South Africa, commissioned a solar telescope in 2021. The weather in Potchefstroom, South Africa, is ideal for solar observations for the biggest part of the year, especially during the dry winter months. The first science application of the solar telescope was investigating the differential rotation rate of the Sun. The solar differential rotation rate is known to be latitudinally dependent. In this study, the photospheric rotation rate is experimentally determined by tracking multiple active regions over successive days using a dedicated hydrogen-alpha solar telescope. The observational campaign runs over a period of 46 days between 15 August and 14 October 2022. A total of 29 active regions are studied. The results of this study are compared to three published models. On average, a faster rotation rate is observed when compared to accepted model predictions. Factors influencing the observational data are investigated, such as the number of observations, the area of a single active region (containing multiple sunspots), as well as the location of each active region with respect to the solar limb.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

Hons

Primary author: LEE, Calmay (North-West University)

Co-authors: Dr STEYN, Petrus Johannes (NWU Centre for Space Research); Prof. SNOW, Martin (South African National Space Agency)

Presenter: LEE, Calmay (North-West University)

Session Classification: Astrophysics & Space Science

Track Classification: Track D2 - Space Science