

Polarimetric exploration of the solar corona during total solar eclipses

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The solar corona, extends far from the sun, is hotter than the photosphere - although the mechanism of coronal heating is not still understood. The solar corona exhibits radial structure, correlated with solar activity – giving rise to bright long streamers at all latitudes during period of high solar activity. During times of low solar activity, the streamers seem to be limited to lower latitudes. However, the corona, being thin and tenuous, is usually not visible, except in naturally total solar eclipses or artificially using coronagraphs. The light from the corona has three primary causes: (i) K-corona or continuum scattering by free electrons; (ii) F-corona or Fraunhofer scattering by dust particles; (iii) E-corona or Emission spectra produced by ions present in the coronal plasma. We focused on the linearly polarized K-corona during the total solar eclipses (TSEs).

Our scientific polarimetric observations of the solar corona are integrated via citizen science partnerships to allow a longer window of coronal observations. In this talk, we will present results from the 2017 TSE (USA) and 2019 TSE (Chile) [1] and our plans for the upcoming 2020 TSE (Argentina).

Reference

[1] Christensen, L. L., *et al.*, 2019: *ESO Messenger* **177**.

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