Polarization Measurements of the White-Light Corona During the 2023 Total Solar Eclipse

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Polarization of the white-light corona is key information for the quantitative study of the K-corona, and therefore, polarization measurements have been one of the principal topics of eclipse observations. We measured the polarization of the white-light corona during the total solar eclipse on April 20, 2023, which took place under high solar activity. Despite the short duration of totality, we were able to obtain high-accuracy polarization data. We derived the brightness and polarization of the K+F corona and estimated the brightness distributions of the K- and F-coronae using polarization information. The polarization of prominences in the continuum was also measured. We compared the eclipse data with those taken by LASCO-C2, and we found that the polarization measured by LASCO-C2 was systematically smaller (by about 30 %) than the results from the eclipse. This is the same trend that we found for the 2017 and 2019 eclipses, which took place around the solar minimum.