Monte Carlo simulation of solar EUV scattering by oxygen ions

*Shin ya Nakano¹, Yuta Hozumi², Akinori Saito³

1. The Institute of Statistical Mathematics, 2. University of Electro-Communications, 3. Department of Geophysics, Graduate School of Science, Kyoto University

It has been reported that the Extreme ultraviolet (EUV) at 83.4 nm, which is scattered by oxygen ions (O+), was observed by an imager of ISS-IMAP in the umbra of the Earth. However, the single scattering of solar radiation in the upper atmosphere would not well explain the observation. This study modeled the EUV scattering by a Monte Carlo method. This method allows us to consider multiple scattering. The result suggests the EUV at 83.4 nm is observable even in the umbra. However, the feature of the observation by ISS-IMAP is not necessarily reproduced. Possible reasons of the discrepancy between the simulation and the observation will be discussed.

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