

## Density Distribution of Nonthermal Oxygen Atom in the Mars Exosphere

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The interaction of Mars atmosphere with the solar wind is important to maintain the Mars exosphere. One of the important mechanisms on the interaction processes is Knock-On of atmospheric particle by solar wind plasma and some atmospheric particles can escape from Mars. In the Mars exosphere, there are also nonthermal oxygen atoms produced by photochemistry. Nagy and Cravens [1988] suggested that the dissociative recombination of  $O_2^+$  is important in the Mars exosphere. A part of the generated oxygen atoms does not have enough escape energy from Mars. Nagy and Cravens [1988] discussed the process with one dimensional model. However, the model is not enough to discuss the structure of Mars exosphere because the production rate of nonthermal oxygen atom depends on Solar flux and solar zenith angle.

We carried out three dimensional simulation of nonthermal oxygen atoms generated by dissociative recombination of  $O_2^+$ . The results showed that the oxygen orbits in the Mars exosphere consists of 3 orbits such as escaping, ballistic and satellite orbits, there is day/night density change, ~60 % oxygen generated by the mechanism can escape from Mars.

Ultraviolet Imaging Spectrometer is on Mars spacecraft of NOZOMI and we have a plan to measure oxygen corona at Mars. From the comparison with our modeling, we will understand the physical process of dynamics of nonthermal oxygen in the Mars exosphere, and will become to be able to discuss in detail about the atmospheric escape at Mars.