

**R007-09**

**C会場 : 9/25 AM2 (10:45-12:30)**

**11:30~11:45**

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## **Numerical study of evaluating the polytropic index in the heliosheath**

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The pickup ions (PUIs) generated from the charge exchange between interstellar neutral particles and solar wind plasma are estimated to constitute about 25% of the total plasma and contribute to the majority of the energy density in the heliosheath. Therefore, quantitative verification of the contribution of PUIs is necessary to elucidate the thermodynamic characteristics resulting from the interaction between the solar wind and the interstellar plasma. Accurate evaluation of the polytropic index is particularly significant as it characterizes the energy transport during solar wind propagation. Previous analysis of observational data suggests that the polytropic index is subadiabatic ( $<5/3$ ) within the termination shock, whereas  $>2$  inside the heliosheath. It must be due to the plasma heating by the dissipation of waves generated by PUIs and through the termination shock. We have previously demonstrated through numerical simulations that the energy distribution in the plasma within the heliosheath varies according to the PUI density. In this study, we further advance these analytical results to identify the relationship between the PUI density and the polytropic index. It aims to deepen our understanding of energy transport characteristics between plasmas within the heliosheath.