

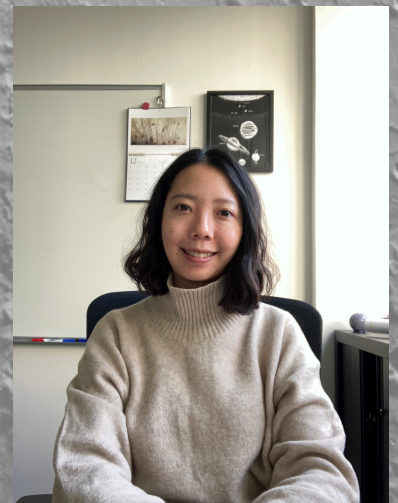
## **Recent observations of Mercury's magnetosphere by BepiColombo during its flybys**

Mercury, the innermost planet of our Solar System, is the only other terrestrial planet besides Earth known to possess a global intrinsic magnetic field. The interaction between the solar wind plasma and magnetized planets gives rise to a magnetosphere—a protective region shaped by the planetary magnetic field. Due to its close proximity to the Sun and its relatively weak magnetic field, which is less than 1% the strength of Earth's, Mercury's magnetosphere is extremely dynamic and highly sensitive to variations in solar wind conditions.

Despite being the least explored of the inner planets, Mercury was first studied during three flybys by NASA's Mariner 10 mission in 1974 and 1975, which confirmed the presence of its intrinsic magnetic field. More extensive investigations were later carried out by NASA's MESSENGER mission, which orbited Mercury from 2011 to 2015.

MESSENGER provided critical insights into the planet's surface, space environment, geochemistry, and internal structure. Although not specifically designed to study the magnetosphere, several of its instruments captured important data on plasma processes occurring around the planet.

These observations have opened up new questions about Mercury's magnetic and plasma environment. To address them, the ESA-JAXA joint mission BepiColombo is currently en route to Mercury. Designed for comprehensive exploration, BepiColombo carries two orbiters equipped with advanced scientific instruments. Although it remains in a stacked configuration during its cruise and flyby phases—limiting full science operations—it has already returned valuable data. In this seminar, I will present and discuss new results from BepiColombo's Mercury flybys, along with ongoing analyses that aim to deepen our understanding of this unique planetary magnetosphere.

**Thursday April 10th****3:30 - 4:30 p.m.****725 Commonwealth Ave | Room 502****Dr. Sae Aizawa****Laboratoire de Physique des Plasma**