R009-06
Zoom meeting D ：11/1 AM2 (10:45-12:30)
10:45-11:00

The water production rate and D/H ratio around comet measured by the Comet Interceptor mission

#Kazuo Yoshioka[1)], Masaki Kuwabara[2)], Go Murakami[2)], Shingo Kameda[4)], Yudai Suzuki[3)], Makoto Taguchi[4)], Takuya Kawahara[5)], Ichiro Yoshikawa[1)]
[1)]The Univ. of Tokyo,[2)]ISAS/JAXA,[3)]Earth & Planetary Science, Univ. Tokyo.,[4)]Rikkyo Univ.,[5)]Faculty of Engineering, Shinshu University

Water (H2O) is a key material of the small bodies in the solar system that holds the information about the evolution of the solar system and the possibility of life. In many cases, the water inside a celestial body (comets or asteroids) is ejected from the surface or into space by sunlight or tidal heating, and then dissociated into hydrogen atoms and hydrogen oxide by UV light. Therefore, it is important to understand the spatial distribution and isotopic composition of these secondary products to understand the origin of the solar system. Although the size of a typical comet nucleus is only about 10 km, the hydrogen gas surrounding the nucleus (coma) is known to extend over 10 million km. We are developing a method to derive the density distribution and isotope ratio (D/H ratio) of hydrogen gas in the comet coma through remote observation. Specifically, the density distribution can be derived using the Lyman- α emission line from hydrogen and deuterium. In addition, an optical filter which is called as an absorption cell is placed on the light path to distinguish the hydrogen and deuterium Lyman- α. In this presentation, we will introduce the instrumentation of the Hydrogen Imager (HI) being designed for the ESA's “Comet Interceptor" mission. The feasibility of the remote observation by HI will also be discussed.