R007-08
Zoom meeting A ：11/1 AM2 (10:45-12:30)
11:45-12:00

On scattering of alpha particles by non-resonant low-frequency Alfven waves in the solar wind

#Yasuhiro Nariyuki
Faculty of Education, Univ. Toyama

It is well known that alpha particles in the solar wind often have the relative drift speed to core protons[e.g., March et al, JGR (1982); Bourouaine et al, ApJ (2011); Matteini et al, ApJ (2015); Zhao et al ,ApJL (2020)]. Theoretical/numerical studies on the relative speed/ temperature ratio between alpha particles and protons have also been carried out by many authors [e.g., Chandran et al, ApJ (2013); Hellinger+ Travnicek, JGR (2013); Maneva et al, A&A (2015)]. In this presentation, we revisit scattering of solar wind alpha particles from the point of view of non-resonant diffusion by low-frequency Alfven waves [e.g. Yoon et al, POP (2009)]. Numerical results of test particle simulations show non-resonant pitch angle diffusion in the wave rest frame, which corresponds to increase of temperature. The relationship between the non-resonant diffusion and the Alfven/Beltrami state[e.g., Yoshida, Nonl. Sci. Numer. Simulat. (2012); Nariyuki, POP (2012); Nariyuki et al, POP (2015)] will also be discussed.