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ポスター 1 : 11/24 PM1/PM2 (13:15-18:15)

#野田 大晟¹⁾, 三好 由純¹⁾, 細川 敬祐²⁾, 浅村 和史³⁾, 坂野井 健⁴⁾, Marc Lessard⁵⁾, Alison Jaynes⁶⁾, Mike Shumko⁷⁾, Alexa Halford⁸⁾, 滑川 拓⁹⁾, 三谷 烈史³⁾, 能勢 正仁¹⁰⁾, Geoff McHarg¹¹⁾, Vincent Ledvina¹²⁾, Don Hampton¹²⁾

(¹⁾名大 ISEE, (²⁾電通大, (³⁾宇宙研, (⁴⁾東北大・理・PPARC, (⁵⁾ニューハンプシャー大学, (⁶⁾アイオワ大学, (⁷⁾ジョンズ・ホプキンス大学応用物理研究所, (⁸⁾NASA ゴダード宇宙飛行センター, (⁹⁾NICT, (¹⁰⁾名市大・DS 学部, (¹¹⁾空軍士官学校, (¹²⁾アラスカ大学フェアバンクス校

Over-darkening of diffuse/pulsating aurora: LAMP sounding rocket observation

#Taisei Noda¹⁾, Yoshizumi Miyoshi¹⁾, Keisuke Hosokawa²⁾, Kazushi Asamura³⁾, Takeshi Sakanoi⁴⁾, Lessard Marc⁵⁾, Jaynes Alison⁶⁾, Shumko Mike⁷⁾, Halford Alexa⁸⁾, Taku Namekawa⁹⁾, Takefumi Mitani³⁾, Masahito Nose¹⁰⁾, McHarg Geoff¹¹⁾, Ledvina Vincent¹²⁾, Hampton Don¹²⁾

(¹⁾Institute for Space-Earth Environmental Research, Nagoya University, (²⁾University of Electro-Communications, (³⁾Institute of Space and Astronautical Science, JAXA, Sagami-hara, Japan, (⁴⁾Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University, (⁵⁾University of New Hampshire, Durham, US, (⁶⁾University of Iowa, Iowa, US, (⁷⁾Applied Physics Laboratory, Johns Hopkins University, Maryland, US, (⁸⁾Goddard Space Flight Center, NASA, Maryland, US, (⁹⁾The National Institute of Information and Communications Technology, (¹⁰⁾School of Data Science, Nagoya City University, (¹¹⁾The United States Air Force Academy, Colorado, US, (¹²⁾University of Alaska, Fairbanks, US

Pulsating aurora is a kind of diffuse aurora that modulate their luminosity from a few seconds to 10 seconds. The over-darkening, in which the brightness is decreased by several tens of percent against background, has been observed just after the luminosity enhancement during the pulsation “ON” time. There have been various reports on over-darkening after pulsating auroras, but details about the over-darkening have not yet been revealed. We have studied the over-darkening phenomena associated with the pulsating aurora using the observation data of electron observations (EPLAS) and optical observations (AIC) onboard the LAMP sounding-rocket experiments, which was launched on March 5, 2022 at Poker Flat Research Range. EPLAS can observe electrons in the 10eV-20keV energy range, and AIC can observe optical emissions in the 667-680nm and 844-848nm wavelength ranges. An event of the over-darkening is observed during the flight operation of the LAMP sounding rocket. The optical aurora emission at the footprint of the LAMP rocket observed by AIC decreased from 3,000 Rayleigh to 1,300 Rayleigh, and the downward energy flux observed by EPLAS decreased by ~50%. The energy flux significantly decreases above 5 keV, especially the flux at 6.6 keV decreased ~40%. Considering the resonance condition with whistler mode chorus waves, the attenuation of precipitation at high-energy electrons is caused by decrease of the pitch angle scattering with the chorus waves. In the presentation, we will show detail variations of energy spectrum and pitch angle distribution of precipitating electrons during the over-darkening and discuss possible mechanisms.