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PRL Ka Amrut Vyakhyaan-09

Wednesday, 29 September 2021

@ 16:00 hrs. IST

"DYNAMICS OF AURORA AND AIRGLOW IN THE UPPER ATMOSPHERE AND SPACE AROUND THE EARTH"

Prof. Kazuo Shiokawa

Institute for Space-Earth Environmental Research, Nagoya University, Japan.

https://youtu.be/Wyj30YrvFSo

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Speaker: Prof. Kazuo Shiokawa

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Abstract

Aurora and airglow are light emissions from the upper atmosphere at altitudes of 80-600 km where International Space Station and most low-altitude satellites are flying. Aurora is excited by collision of space plasma with the Earth's atmosphere, while airglow is excited mainly by solar ultraviolet emissions. The space plasmas originally come from the sun and from the Earth's atmosphere. They are stored and energized in the space around the Earth. We can visualize dynamics of space plasma and upper atmosphere through aurora and airglow. The dynamic variations contain geomag- netic storms and substorms, plasma bubbles, and traveling ionospheric disturbances. These space plasma and upper atmospheric dynamics often cause satellite anomaly, satellite positioning error, radiation dose of satellites and astronauts, ozone destruction, and so on, as referred to the space weather effect.

The Speaker

Professor Kazuo Shiokawa is the Vice Director of the Institute for Space-Earth Environmental Research, Nagoya University, Japan and the Director of the Center for International Collaborative Research at ISEE at Nagoya University. He is also the elected President of the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP). Prof. Shiokawa did his B.Sc. (1988) and M.Sc. (1990) in Geophysics from Tohoku University, Japan, and Ph.D. from the Nagoya University, Japan. He had worked as a Research Associate at the Solar-Terrestrial Environment Laboratory (STEL), Nagoya University, Visiting Scientist at Max-Planck-Institut fuer extraterrestrische Physik, Germany, and Associate Professor & Professor at the STEL. His research interests include Space Science and Aeronomy, in general, and, in particular, the dynamical coupling of the solar wind, magnetosphere, ionosphere, thermosphere, mesosphere, ground-based optical and electromagnetic measurements related to aurora and airglow. Prof. Shiokawa has received many awards and recognition which include, Obayashi Early Career Scientist Award in 1999 and Tanakadate Award in 2009, both of Society of Geomagnetism, and Earth, Planetary, and Space Physics, Editors' Citation for Excellence in Refereeing for JGR-Space Physics of American Geophysical Union for the years 2010 and 2011. He is a member of the Society of Geomagnetism, and Earth, Planetary, and Space Physics, Japan, the American Geophysical Union, and the Meteorological Society of Japan. He has published around 320 articles in peer-reviewed journals in addition to several chapters in books.

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