Another expert's lecture
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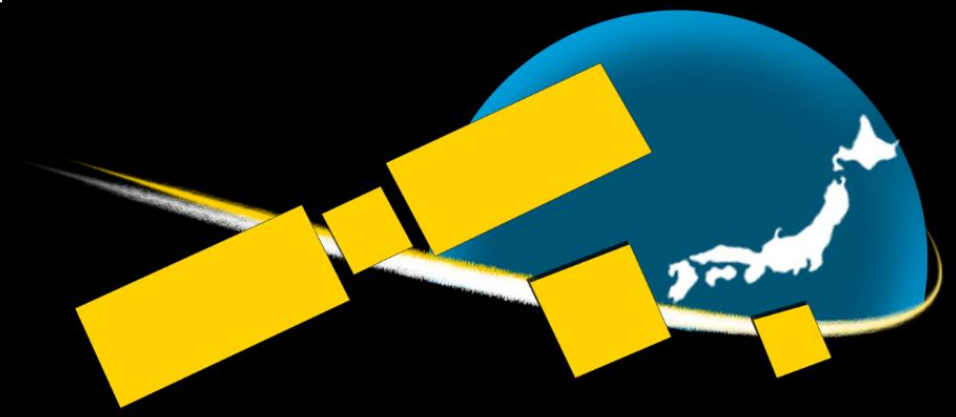

SEIC

Space Engineering International Course

SEIC Guest Lecture

by

Emine Ceren Eyigüler

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University of Saskatchewan
Canada

UNIVERSITY OF SASKATCHEWAN

This 8-page promotional document was created by G. Maeda on 11-APRIL-2022

Date: Thursday (14 Apr 2022)

Time: 9:00 AM Japan Std Time

Language: English

The ZOOM link will be sent to SEIC students via the SEIC Student Mailing List on or before 13 April 2022.

Title:

Determining the characteristics of transionospheric HF waves using antenna onboard spacecraft: Case examples from the Radio Receiver Instrument onboard CASSIOPE-ePOP/SWARM-E

Abstract:

See the next next page.

Note to doctoral students

If you are not a member of SEIC, and you wish to have seminar credit for this lecture, please request the ZOOM ID and password from Prof. Maeda using his email address (see the text at the right).

This lecture can be counted as "Interdisciplinary Seminar for Engineering　工学融合科目“ for Kyutech doctoral students.

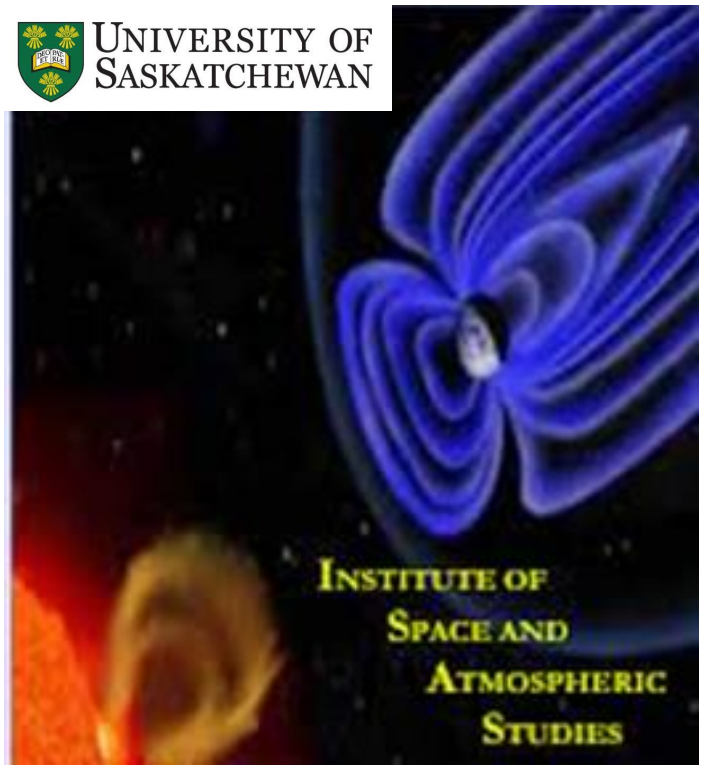
However, please note that this lecture will be provided under "Electrical and Space Systems Engineering Course 電気宇宙システム工学コース". Hence, students cannot count this lecture if it is your own major course.

Instead of getting a stamp 印鑑 as a proof of attendance, submit a one paragraph (75-150 words) summary (typed in English, with student ID number and date, and then signed) using Microsoft Word. Send the file to Prof. Maeda within one week of the lecture. His email address is: maeda.joji749@mail.kyutech.jp

If you do not have “Performance report form of Interdisciplinary Seminar of Engineering” , go to this website and download the form: https://www.tobata.kyutech.ac.jp/gr-school/gra-menu/

If you have any questions concerning the contents of this page, please contact the Graduate School Section:　koh-daigakuin[at]jimu.kyutech.ac.jp

Abstract



High Frequency (HF) waves, also known as the shortwave radio, correspond to the 3-30 MHz band of the electromagnetic spectrum. HF waves propagate in the ionosphere via Ordinary (O) and extraordinary (X) modes. The path differences between the O and X mode waves cause changes in the radio wave polarization characteristics. Additionally, characteristics of the waves observed by a receiving dipole are contingent upon the geometry between the transmitting source and receiving antenna.

In this presentation, I will briefly introduce the ionosphere, how waves propagate through it, and focus on the observed signal characteristics by a receiver onboard a spacecraft and discuss the points that should be taken into account while resolving the signal characteristics measured by an antenna onboard a satellite. I will discuss how attitude determination can be used in the studies of the ionosphere by focusing on the CASSIOPE/SWARM-E/Enhanced Polar Outflow Probe (ePOP)-Radio Receiver Instrument (RRI) observations.

Dr. Emine Ceren Eyigüler

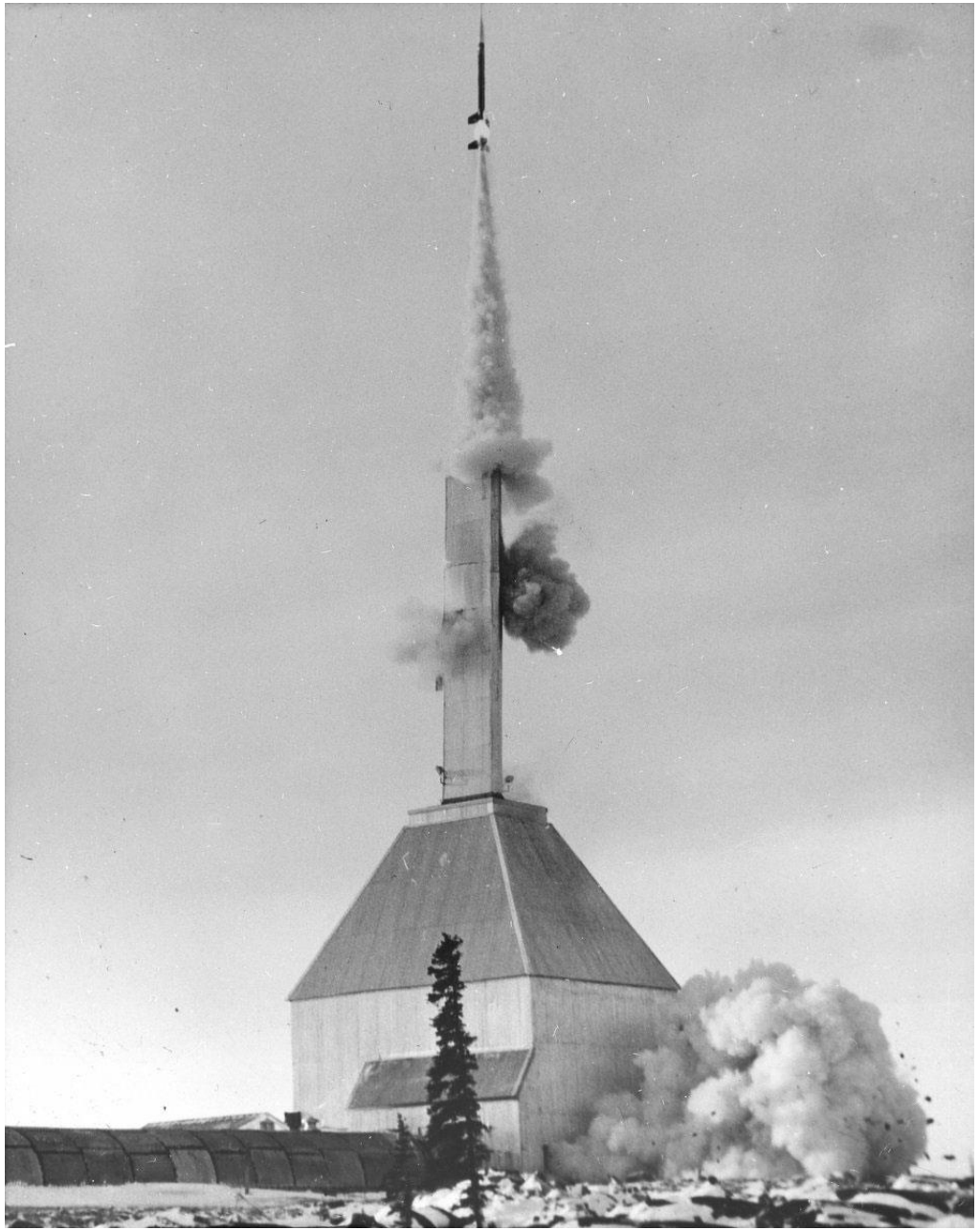
Institute of Space and Atmospheric Studies
at the University of Saskatchewan (Canada),
Department of Physics/Engineering Physics

Bio of our guest lecturer

Emine Ceren Eyigüler obtained her PhD from the *Istanbul Technical University, Graduate School of Science and Engineering, Atmospheric Sciences* program. Her research focuses on the variations in ionosphere, thermosphere and the ground under different levels of geomagnetic activity. She combines space-borne and ground-based measurements of the upper atmospheric parameters and employs space weather models (physics-based and empirical) to study the physics and interaction mechanisms of the elements of the space weather chain.

Eyigüler currently works as a postdoctoral fellow in the **Institute of Space and Atmospheric Studies at the University of Saskatchewan, Department of Physics/Engineering Physics.** Her postdoctoral research focuses on the transionospheric HF radio wave propagation. At the same time, she is holding her position as a senior researcher in the Upper Atmosphere and Space Weather Laboratory and lecturer in the Department of Meteorological Engineering, Faculty of Aeronautics and Astronautics, Istanbul Technical University.

Some history and background



University Archives & Special Collections, RG 2043, Bx2, C-7. (Patrick Hayes)

Institute of Space and Atmospheric Studies
On July 11, 1967, the University's Institute of Space and Atmospheric Studies in co-operation with Bristol Aero-Space Industries Ltd. of Winnipeg sent up two Black Brant 3 rockets from the Churchill Research Range.

The launchings marked the third and fourth in a series of experiments to better understand weather patterns by studying the photochemistry of the atmosphere.

Each rocket rose approximately 100 km into the atmosphere. The clamshell nose cones separated in flight to expose a light measuring device called a photometer.

All measurements were “telemetered” to the ground and no attempt was made to recover the scientific instruments. Both payloads, weighing approximately 80 kilograms, were built and tested in the workshops of the institute on campus and then sent to Winnipeg for further testing and incorporation into the nose cones. Bristol Aero-Space supplied the rocket engineering under a contract with the National Research Council.

https://canada150.usask.ca/research/institute-of-space-and-atmospheric-studies.php

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THE END