Boston College Institute for Scientific Research

Seminar

Speaker: Juha Vierinen, MIT Haystack Observatory, Westford, MA

Title: Small Form Factor Ionosonde for Dense Instrument Networks

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Abstract:

We present the design of a low cost, low power, and small form factor ionosonde intended for use in a dense network to perform volumetric sensing of the ionospheric electron density. In order to avoid interference from the ionosonde to other users of the HF band, and to other nearby ionosondes, the instrument utilizes continuous low power pseudorandom noise waveforms. These waveforms are unique to each ionosonde in the network of ionosondes. We outline the principles of the signal processing involved, including how to receive multiple transmissions simultaneously. We show results from a prototype instrument that we have built and successfully used to measure an ionogram with several mW of transmit power.