

# Title: Multi-instrument detections of ionospheric disturbances

Simon Mackovjak,

Department of Space Physics, Institute of Experimental Physics, Slovak Academy of Sciences

## Abstract

The Earth's ionosphere is frequently perturbed by solar, geomagnetic, and atmospheric events, which might impact critical technologies. Studying these complex ionospheric disturbances requires observations beyond single-instrument capabilities. This presentation suggests multi-instrument synergy in detecting, characterizing, and understanding of drivers of ionospheric scintillations. By combining complementary data from ground-based systems like GNSS receivers, ionosondes, continuous Doppler Sounding systems, and airglow imagers, we achieved a more holistic view of these events. We present case studies showcasing how this integrated approach enhances the understanding of these events. Important progress in this study was possible thanks to the PITHIA-NRF TNA program.