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Professional Profile

Dr. Hosseini is experienced in applied electromagnetics and plasma physics. He brings extensive expertise in radio frequency wave propagation in plasma environments, geospace remote sensing, and computational modeling of low frequency electromagnetic waves. He is passionate about using radio frequency signals for atmospheric lightning geolocation, space weather forecast, subterranean mapping, and earthquake prediction.

Hosseini's expertise includes automated extraction of signals from natural (atmospheric lightnings) and man-made (electric power transmission lines) sources and kinetic simulation of nonlinear wave particle interactions in the Earth's radiation belts. He has developed finite difference modeling of wave propagation in 1) magnetized plasma, 2) the Earth-ionosphere waveguide, and 3) nanoscale plasmonic structures. Additionally, he investigated low frequency wave generation via ionospheric heating and imaging of conductive objects inside enclosures (containers, tunnels, etc.).

While at the Johns Hopkins University Applied Physics Laboratory, Dr. Hosseini gained expertise on science-dedicated radar networks and space missions within the Space Exploration Sector. He also briefly assisted with AC/DC module of low frequency electromagnetics team at COMSOL Multiphysics.

Academic Credentials & Professional Honors

Ph.D., Engineering and Applied Science, University of Colorado - Denver, 2020

M.S., Electrical Engineering, University of Colorado - Denver, 2018

B.S., Electrical Engineering, K.N. Toosi University of Technology, Iran, 2014

Young Scientist Award – URSI General Assembly and Scientific Symposium, Sapporo, Japan, 2022

Cheetah Award – 10th VERSIM Workshop, Geophysical Observatory, Sodankylä, Finland, 2021

Outstanding Graduating Student – University of Colorado, Denver, CO, USA, 2020

Best Student Paper Finalist (3rd place) – US National Radio Science Meeting, Boulder, CO, USA, 2019

Best B.Sc. Thesis Award (3rd place) – IEEE Iran Section, Tehran, Iran, 2014

Professional Affiliations

American Geophysical Union - AGU

Institute of Electrical and Electronics Engineers—IEEE

US Radio Science Union - URSI

Publications

Hosseini, P., Gołkowski, M., & Turner, D. L. (2017). Unique concurrent observations of whistler mode hiss, chorus, and triggered emissions. Journal of Geophysical Research: Space Physics, 122(6), 6271-6282.

Hosseini, P., Golkowski, M., Chorsi, H. T., Gedney, S. D., & Moore, R. C. (2018). Using eccentricity to locate ionospheric exit points of magnetospheric whistler mode waves. IEEE Transactions on Geoscience and Remote Sensing, 56(12), 7049-7061.

Hosseini, P., Gołkowski, M., & Harid, V. (2019). Remote sensing of radiation belt energetic electrons using lightning triggered upper band chorus. Geophysical Research Letters, 46(1), 37-47.

Gołkowski, M., Harid, V., &Hosseini, P. (2019). Review of Controlled Excitation of Non-linear Wave-Particle Interactions in the Magnetosphere. Frontiers in Astronomy and Space Sciences, 6, 2.

Hosseini, P., Agapitov, O., Harid, V., & Gołkowski, M. (2021). Evidence of Small-Scale Plasma Irregularity Effects on Whistler Mode Chorus Propagation. Geophysical Research Letters, 48(5), e2021GL092850.

Harid, V., Liu, C., Pang, Y., Alvina, A. J., Golkowski, M., Hosseini, P., & Cohen, M. (2021) Automated Large-Scale Extraction of Whistlers using Mask-Scoring Regional Convolutional Neural Network (MSRCNN). Geophysical Research Letters, e2021GL093819.

Harid, V., Gołkowski, M., Hosseini, P., & Him, K. (2022). Backward Propagating Source as a Component of Rising Tone Whistler Mode Chorus Generation. Frontiers in Astronomy and Space Sciences, 9, 981949.

Harid, V., Agapitov, O., Khatun-E-Zannat, R., Gołkowski, M., & Hosseini, P. (2024). Complex Whistler-Mode Wave Features Created by a High-Density Plasma Duct in the Magnetosphere. Journal of Geophysical Research: Space Physics, 129(3), e2023JA032047.

Peer Reviews

Referee for Journal of Geophysical Research — Space Physics

Referee for Geophysical Research Letter

Referee for IEEE Transactions on Geoscience and Remote Sensing