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Ph.D. School in Electronics, Computer Science and Electrical Engineering

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SEMINAR

Microwave Applications for Snow Monitoring: from theory to practice

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10/06/2022, 11 am

Aula Seminari Magenta – Dipartimento di Ingegneria Industriale e dell'Informazione

Abstract: Snow is a very important environmental variable and a primary water resource in many areas of the world. Monitoring seasonal snowpack properties is crucial for properly managing snow-related hazards such as snow avalanches and snowmelt-floods. Microwave radars have been proposed as a mean to non-destructively monitor snowpacks, but they face several problems. From the electromagnetic point of view, snow is a complex material that can change its electromagnetic properties within seconds. Moreover, it is almost impossible to be studied inside a laboratory and some of the sites for studying the snow in good conditions can be hard-to-reach and with adverse meteorological conditions. All these aspects make the study of snow a real challenge. This seminar will focus on the techniques to study the snow using microwaves and how these techniques are applied in the field.

Bio: Pedro Espín-López was born in Murcia, Spain, in 1989. He received the M.S. degree in electronic engineering from the Technical University of Cartagena, Spain, in 2015. During 2015-2016 he worked with the European Institute of Oncology (IEO) as research fellow. His work was focused on the study of non-ionizing dosimetry and the assessment of safety for a breast cancer detection system using millimetre and sub-millimetre waves. In 2020, he received the Ph.D. in electronics from the University of Pavia thanks to his research activities on the study and development of microwave and millimetre wave radar systems, paying special attention to the monitoring of the snow cover. Currently he is working at the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC) as Research Assistant in the Geomatics Research Unit.

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Seminar in English

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