

**Marie Skłodowska Curie Action –Postdoctoral Fellowship 2024
(MSCA-PF-2024)**

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Department /Institute /Centre Name		Departamento de Ingeniería Audiovisual y Comunicaciones (DIAC-UPM)
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Province		Madrid, Spain
Research Area		<u>Information Science and Engineering (ENG)</u>
Brief description of the Centre/Research Group		<p>The Radio Communications Group at UPM (GRC-UPM) is a European research leader with expertise in wireless communications and the development of RF hardware equipment. Our research has grown over the years in according to international standards. We give research a high priority with a clear commitment with innovation and transfer of know-how to industry.</p> <p>Our group has more than 15 years working on wireless communications for intelligent transportation systems and on personal mobile communications, and more than 25 years working on radio communications, including the development of microwave devices and systems.</p> <p>Know more about us at our webpage: grc.upm.es</p>
Project description		<p>Ultra-wideband 3-D-printed antennas for VLEO secure satellite communications.</p> <p>Very Low Earth Orbit (VLEO) satellites recently received a significant increase in commercial importance due to attractive opportunities that can provide. One of the main challenges for VLEO is to have robust and secure communication, which can be achieved by ultra-wideband (UWB). UWB solutions can be easily implemented for ground communications. However, there is a main research gap in having an efficient transceiver in VLEO satellites. Despite the availability of most of the transceiver components (such as amplifiers and mixers), the main challenge is to get an efficient proper antenna due to the satellite's hard requirements, which can be divided into four main challenges: I) Cover the whole band with stable performance; II) Obtain a high gain to compensate high path losses. III) Get a circular polarization to simplify signal acquisition without antenna adjustments and avoid the altering of the polarization due to rain and water droplets; and IV) physical restriction of compact size, small weight, and affordable cost.</p> <p>The proposal aims to design and build a solution based on an antenna that works efficiently from 3 to 11 GHz to enable secure UWB communications for VLEO. To reduce costs, several manufacturing methods should be investigated such as 3D dielectric printing to be metalized later by metallic sprays and/or chemical processing. The work plan also includes the design of an array version to cover dual circular polarizations. Both antenna and array should be analyzed in two configurations, isolated elements and integrated into a reflector.</p>
Applications: documents to be submitted and deadlines		<p>Those interested in the position and meeting the requirements, please send your application with next documents before <u>April 30, 2024</u>:</p> <ul style="list-style-type: none"> - Transcript of records of previous studies. - Resume, also including publications and projects. - Motivation letter.