Session 1: 10h55 – 11h20
Presentation from selected STSM (Short Term Scientific Mission) awarded researchers and Working Group meetings

How to design thin sound diffusers for room acoustics based on metasurfaces: metadiffusers

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Sound diffusers are structured surfaces designed to control the scattering of acoustic waves, mainly used in room acoustics to improve sound quality. However, as they are mainly based on quarter-wavelength resonators, phase-grating diffusers result in heavy and thick structures. We present a novel approach to design deep-subwavelength sound diffusers based on subwavelength resonating units, i.e., metamaterials. The proposed “metadiffusers” show broadband diffusion ranging from 250 to 2 kHz using panels of 3 cm, 20 times thinner than traditional designs. In addition, their performance can be tailored to classical quadratic residue, primitive root and ternary sequence designs.