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Experimental exploration of diffusion panel labyrinth in scale model

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Abstract:

Small rehearsal and performance venues often lack the rich reverberation found in larger spaces. Higiní Arau-Puchades has designed and implemented a system of diffusion panels in the Orchestra Rehearsal Room at the Great Theatre Liceu and the Tonhalle St. Gallen that lengthen the reverberation time. These panels defy traditional room acoustics theory which holds that adding material to a room will shorten the reverberation time. This work explores several versions of Arau-Puchades' panels and room characteristics in scale model. Reverberation times are taken from room impulse response measurements in order to better understand the unusual phenomenon. Scale modeling enables many tests but has limitations in its accuracy due to the higher frequency range involved. Further investigations are necessary to establish how the sound energy interacts with the diffusion panels and confirm their validity in a range of applications.

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