University of Rochester
Department of Electrical and Computer Engineering
Colloquia Series

Sound Diffusion and Room Impulse Response Functions

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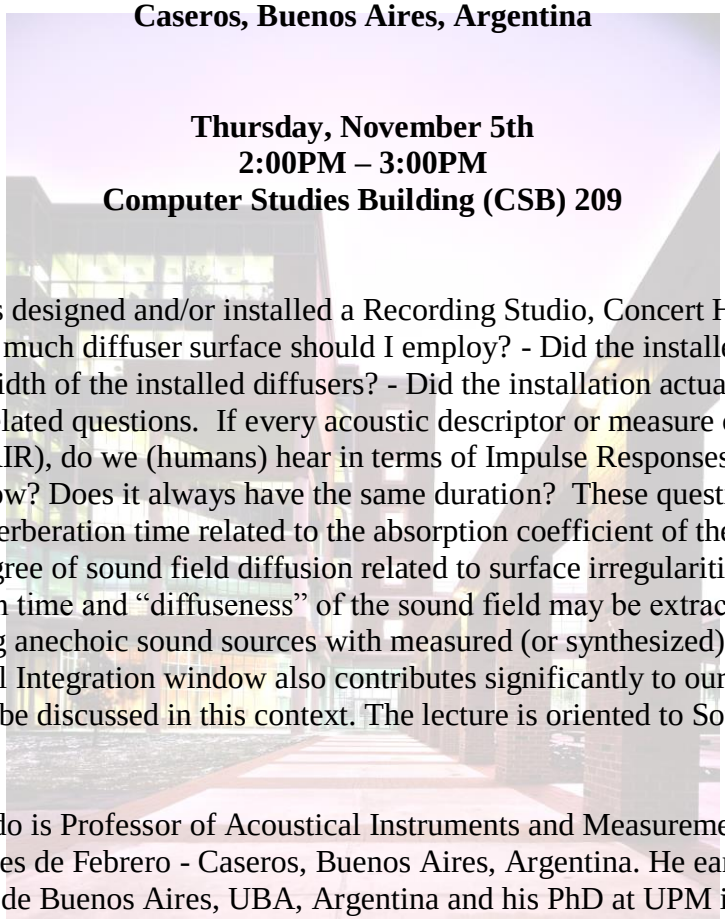

Thursday, November 5th
2:00PM – 3:00PM
Computer Studies Building (CSB) 209

Abstract: Everyone who has designed and/or installed a Recording Studio, Concert Hall, Auditorium or Theater, has asked themselves: How much diffuser surface should I employ? - Did the installed diffusers work well? - What is the working bandwidth of the installed diffusers? - Did the installation actually increase the sound field diffusion? - among other related questions. If every acoustic descriptor or measure can be derived from a Room Impulse Response (RIR), do we (humans) hear in terms of Impulse Responses? Is there an Auditory Temporal Integration window? Does it always have the same duration? These questions may seem unrelated, but just as there exists a reverberation time related to the absorption coefficient of the walls in an acoustic space, there also should exist a degree of sound field diffusion related to surface irregularities and room volume. In both cases, the reverberation time and "diffuseness" of the sound field may be extracted from RIRs, and may be demonstrated by convolving anechoic sound sources with measured (or synthesized) RIRs. The effect of the (human) Auditory Temporal Integration window also contributes significantly to our perception of temporal sound information and will be discussed in this context. The lecture is oriented to Sound, Audio and Acoustics Students at all levels.

Bio: Prof. Alejandro Bidondo is Professor of Acoustical Instruments and Measurements at UNTREF, Universidad Nacional de Tres de Febrero - Caseros, Buenos Aires, Argentina. He earned his Dipl. Electronic Engineer from Universidad de Buenos Aires, UBA, Argentina and his PhD at UPM in Spain. His research interests include: neuroacoustics, speaker identification, psychoacoustics, acoustic diffusers, room acoustics, urban noise and vibration environmental studies, concert hall design and forensic audio analysis.

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