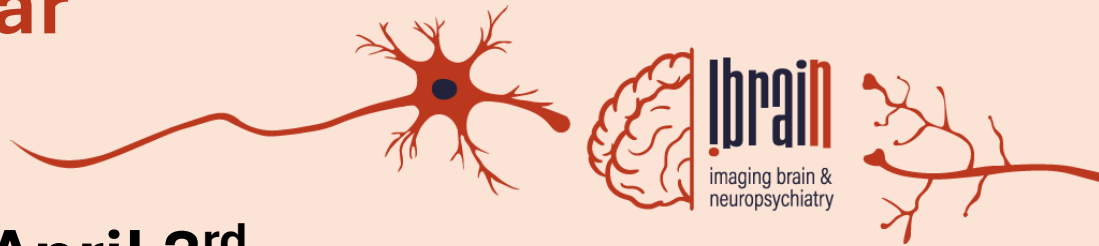


Seminar

iBrain



Friday, April 3rd

10:00-12:00

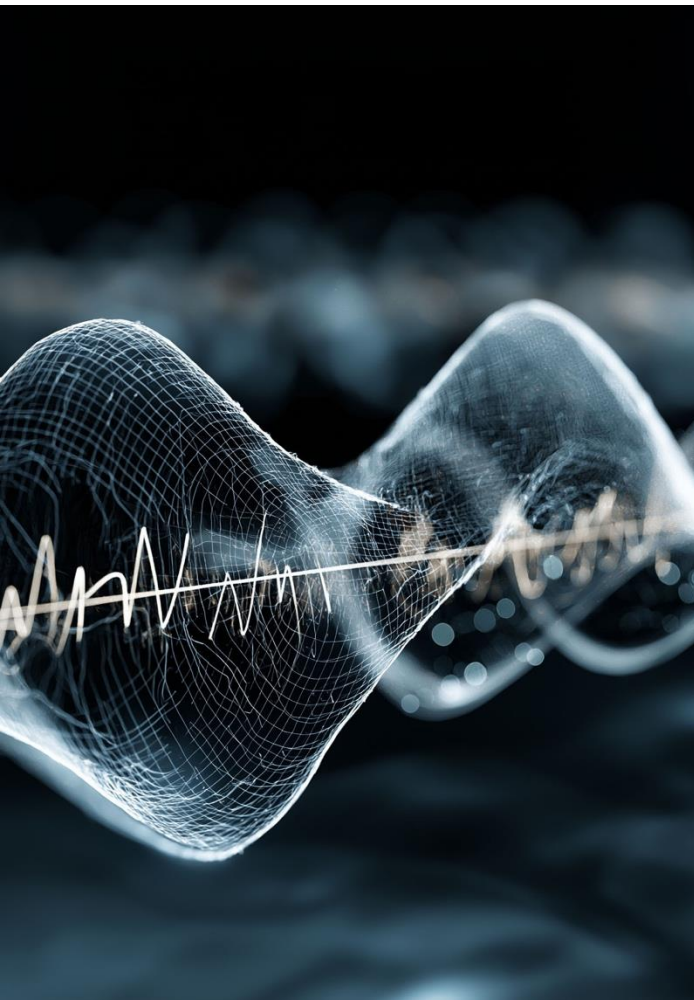
Leandre Pourcelot Room



**IEEE ULTRASONICS, FERROELECTRICS,
AND FREQUENCY CONTROL SOCIETY**

IEEE UFFC 2026 Distinguished Lecture

Measurement of Acoustic Pressure with Hydrophones



Keith Wear, PhD, Professor

Research Physicist, US FDA

Accurate acoustic pressure measurements with hydrophones are critical to demonstrate safety and effectiveness of ultrasound devices as well as ensuring reproducibility of ultrasound experiments and treatments. Many ultrasound researchers perform hydrophone measurements, but few are aware of the distortions that hydrophones produce and the recently developed algorithms to correct for them. This tutorial will cover:

1. *Physics of hydrophone designs (e.g., membrane, needle, capsule, reflection-type fiber optic, Fabry-Perot interferometric fiber optic),*
2. *Hydrophone specifications (e.g., sensitivity, directivity, effective sensitive element size),*
3. *Pros and cons of the various hydrophone designs for different applications,*
4. *Practical advice for water-tank measurements,*
5. *Deconvolution methods to remove pressure measurement distortions due to frequencydependent sensitivity and spatial averaging artifacts.*

Dr. Wear's algorithms have been applied in elastography, ophthalmology, cavitation monitoring, high intensity therapeutic ultrasound, and transcranial neuromodulation. They have been included in International Electrotechnical Commission standards and have been cited in official position statements by the American Institute of Ultrasound in Medicine and the International Transcranial Ultrasonic Stimulation Safety and Standards Consortium.

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