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-chamber primary calibration for microbarometers

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In previous work, the National Center for Physical Acoustics at the University of Mississippi designed and built a large chamber for secondary (referenced) calibration of microbarometers. Sandia National Laboratories (SNL) then refined and implemented this chamber at their Facility for Acceptance, Calibration, and Testing (FACT) site. This large (1400 L) steel chamber incorporates two moving coil loudspeakers capable of operating in receive and transmit mode, and in more recent work, the Penn State University (PSU) and SNL used these loudspeakers to develop and implement a reciprocity-based primary (non-referenced) calibration technique for the chamber. While this technique has been shown to have suitable accuracy and uncertainty above 0.05 Hz, uncertainty increases rapidly below this frequency due to reduced loudspeaker response and increasing noise within the chamber. Due to this, the authors are investigating additional calibration techniques that may be applied in the lower band (0.01 to 0.05 Hz) to enable primary calibration over the full band of interest (0.01 to 10.0 Hz). This talk will discuss the challenges of the reciprocity method in the lower band, and provide an early look at additional primary calibration techniques that may find utility in the chamber.

E-mail

cms561@psu.edu

Primary author: SMITH, Chad (Penn State University)

Co-authors: Mr MERCHANT, Bion John (Sandia National Laboratories (SNL)); GABRIELSON, Thomas (Penn State University)

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