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First Time of nanoscopic electrostatic drives pushing for ultrasonic transmission for gesture recognition

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Abstract

The design, fabrication, and acoustic characterization of an electrostatic ultrasound transducer based on lateral actuation is documented in this letter. Unlike cMUTs or pMUTs, this device-NED-MUT -does not use a membrane to generate pressure waves but instead displaces air using the volume of the chip. A single transmitter unit, composed of 258 actuators in an area of 3×3 mm2 operating at 40 kHz, was capable of generating a pressure level of 87 dB (relative to 20 µPa rms) at a distance of 8.9 cm with an input voltage of 24V DC plus 24V AC. The measured performance makes the NED-MUT suitable for gesture recognition using ultrasound ranging.

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