Abstract Submitted
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SAW devices based on novel surface wave excitations JOEL THERRIEN, LIAN DAI, ECE Dept, U Mass Lowell — Surface Acoustic Wave (SAW) devices have applications in radio frequency and microwave filtering as well as highly sensitive sensors. Current SAW design employs the use of an array of electrode pairs, referred to as Inter-Digitated Transducers (IDTs) for creating and receiving surface waves on piezoelectric substrates. The pitch of the electrode pairs along with the properties of the substrate determine the operating frequency. The number of electrode pairs determine the bandwidth of the emitted waves. We will present a novel configuration that eliminates the need for the IDTs and replaces with with a single circular electrode located inside a larger ground ring. This configuration induces drumhead modes. We will show that the resonant frequencies follow the zeros of Bessel functions of the first kind. Applications in RF filtering and mass sensing will be presented.

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