

DESIGN AND FABRICATION OF THE TRAPEZOIDAL ELECTROSTATIC COMB-DRIVE ACTUATOR

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TÓM TẮT:

This paper reports the design, fabrication and characterization process of the trapezoidal Electrostatic Comb-drive Actuator (ECA) with the slope angle $= 2^\circ$. Together with the trapezoidal ones, the rectangular ECA with identical dimension was also designed and fabricated for comparison purpose. In order to reduce calculating deviation, the fringing effect was also taken into consideration while carrying out theoretical analysis. The obtained results pointed out the fact, that the trapezoidal ECA excels the rectangular ones with the same numbers of teeth in electrostatic force and displacement generation, while requires relatively low driving voltage. But it is also observed that with higher driving voltage (larger than 50 V), the trapezoidal ECA starts to lose its stability (the lateral pull-in phenomenon occurs).