

## **Robust Controller Design and Integration for a Multiple-Axis Piezoelectric Nanopositioning Stage**

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### **Abstract**

This paper applies robust control to a three dimensional piezoelectric transducer (PZT) stage. PZT stages are usually applied for precision positioning. However, their nonlinear characteristics, such as hysteresis, might degrade system performance. Therefore, we applied robust control strategies to identify their linear models and regard the nonlinearities as system uncertainties which are treated by robust methodologies. The designed controllers are shown to achieve an accuracy of 5nm and 17 nrad.