

# Reducing Hysteresis Effect of Force Actuator in a Scanning Probe Microscope

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## Abstract

This research is to use only PI controllers to reduce the hysteresis effect of a force actuator for a Scanning Probe Microscope (SPM). Comparisons with the previous design with Linear Velocity Transducer (LVT) for inner-loop feedback compensation are also made. Generally, the phase margins are larger for the newly proposed method. This improvement has been verified by MATLAB simulation and practical implementation to reduce the hysteresis effect of the force actuator. Thus the new design is cheaper and valuable.

Keyword : SPM, LVT, LVDT, Load cell, PI compensator, Force actuator, Hysteresis effect