$\begin{array}{c} {\rm UNIVERSITY\ OF\ CALIFORNIA,} \\ {\rm IRVINE} \end{array}$

Spin torque driven magnetization dynamics in nanoscale magnetic tunnel junctions

DISSERTATION

submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in Physics

by

Chengcen Sha

Dissertation Committee: Professor Ilya Krivorotov, Chair Professor Zuzanna Siwy Professor Wilson Ho

DEDICATION

To My parents, Zhenglian and Wenyu.

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ABSTRACT OF THE DISSERTATION

Spin torque driven magnetization dynamics in nanoscale magnetic tunnel junctions

By

Chengcen Sha

Doctor of Philosophy in Physics

University of California, Irvine, 2018

Professor Ilya Krivorotov, Chair

The abstract of your contribution goes here.

Bibliography

Appendix A

Appendix Title

Supplementary material goes here.

A.1 Detailed System Design of Perpendicular station

Equipment needed:

GMW Dipole Electromagnet Model 3470 Kepco bipolar operational power supply model Model $50\text{-}8\mathrm{M}$

Cascade RF probe: SG-120um Cascade RPP210-AI probe positioner (both the probe and the positioner are non-magnetic)

Sentech Output 720p Cased Camera Navitar 12X Zoom Lens System AmScope LED-80M 80-LED Microscope Ring Light