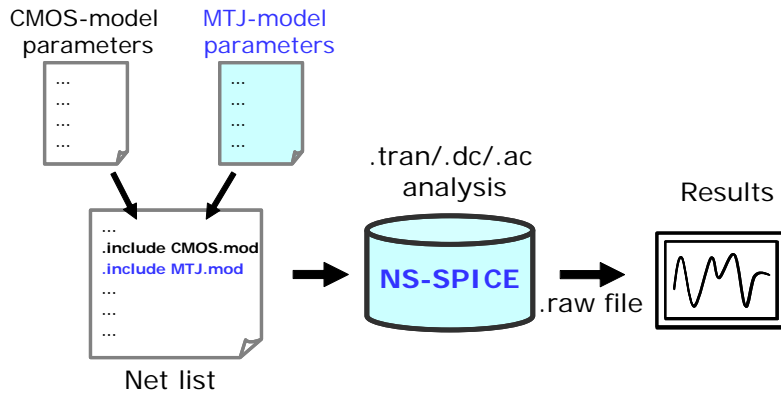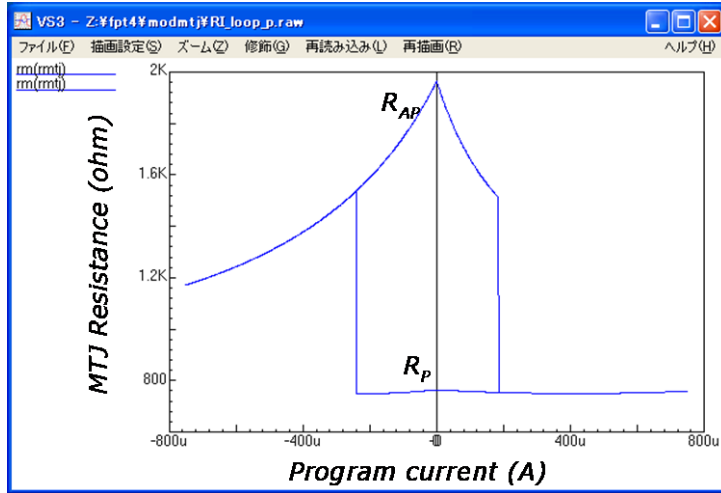# MTJ Models on NS-SPICE

Description

Designers can simulate spintronics circuits by including MTJ-model parameter file in SPICE net list in the same way as a CMOS-transistor model.


Features

- Two physical models are supported.
  - ➢ Spin-torque model
  - ➢ Thermal-assist model
- MTJ characteristics are "precisely" reproduced.
  - ➢ Resistance depending on bias and temperature.
  - ➢ Switching time depending on current and temperature.
- High-speed simulation
  - ➢ CPU-time down to 1/3~1/500 compared with conventional sub-circuit models.
- Useful interface for simulation
  - ➢ Available on your spintronics circuit design just by including MTJ model-parameter file
  - ➢ Monitoring function of the transition of MTJ resistance, tunnel current, switching probability, and logic value.
  - ➢ Two-terminal and three-terminal spin-devices are supported for circuit simulation.
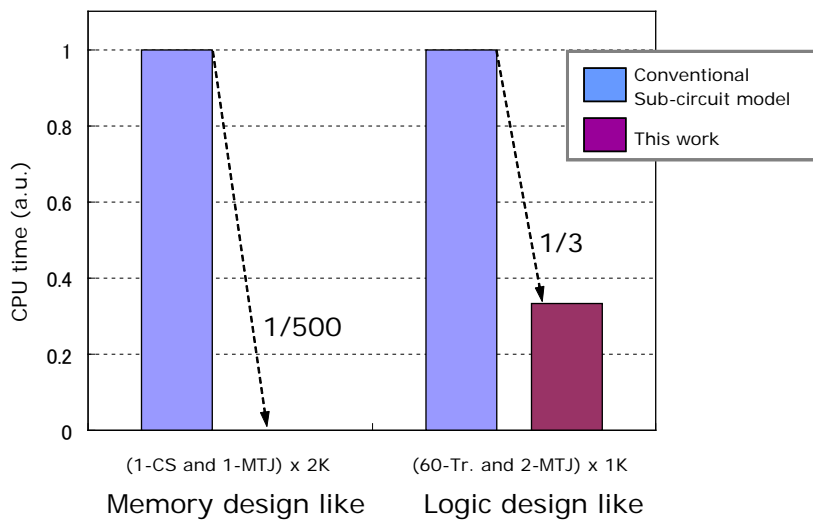
DC analysis example

TRAN analysis example
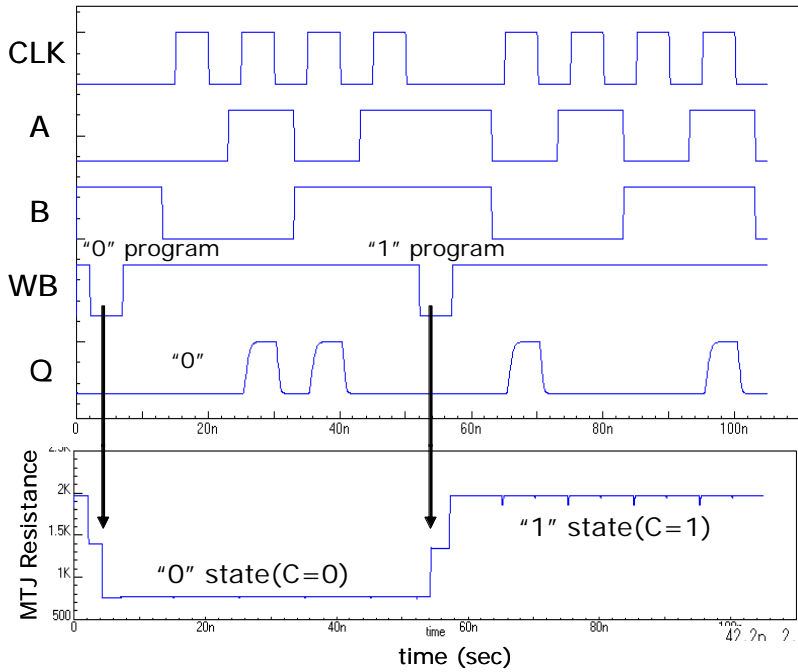
Performance benchmark

About NS-SPICE

Our MTJ-model parameters correspond to NS-SPICE circuit simulator released by Nanodesign Corporation.

For details of NS-SPICE, please refer to http://www.nanodesign.co.jp/EN/ns-spice .

Details

Name: MTJ models on NS-SPICE

Created: March, 2012