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References Category:Radio stations in Italy set to a low temperature. We next examine the dependence of the switching current on the magnetic field. The switching current was experimentally measured as a function of the magnetic field for $T=1.3$ K and $T=1.8$ K. The switching current is normalized to the tunneling resistance, which depends on the magnetic field and can be modeled using the form $I/I_0= \sin (\varphi)/ \sin(\varphi + \alpha_H)$, where $I_0=e \hbar/\eta (4\pi M_s)$, and M_s is the magnetization of the free layer. The measured values of α_H are shown in Fig. \[fig:Fig4\](d). The solid line shows the best-fit of the data to

Eq. (\[eq:switchingcurrent\]) with $D=8.8\times10^{-11}$ eV/cm^2 and $E=3.9$ eV. The value of D is much larger than the exchange coupling between the free and pinned layer ($D_{\rm ex}=1.7\times10^{-12}$ eV/cm^2). This suggests that a large electric current in the N/F/N heterostructure provides a large electric field on the free layer. The simulation of the switching current is shown by the dotted lines in Fig. \[fig:Fig4\](c). The experimental data are reproduced for $T=1.3$ K and $T=1.8$ K. The values of the constants are chosen to reproduce the experimental data, and are varied within the range that is compatible with

the data. In conclusion, we have performed a comprehensive study on the thermal switching of magnetization between the two magnetically ordered states of a Co/Pt free layer in an N/F/N MTJ structure. The experimentally observed switching behavior could be well explained by the magnetostatic and magnetoelastic field-driven switching. An improved model with additional perturbations is needed to quantitatively describe the experiments. This research was supported by the GCOE program "The Next Generation of Physics, Spun from Universality and Emergence"

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