

UNL Department of Physics and Astronomy presents:

Voltage Controlled Neel Vector Rotation in Zero Magnetic Field

PRESENTED BY

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THURSDAY
SEPTEMBER 2
4:00 PM
IN JH 136

Refreshments will be served in the JH 1st Floor Vending Area at 3:30

ABSTRACT

Voltage-controlled switching of remnant magnetic states paves the way towards ultra-low power and non-volatile spintronics. In this presentation, I report on the ups and downs of a journey, which took us from isothermal electric switching of exchange bias with the help of applied electric and magnetic fields¹ to pure voltage-controlled antiferromagnetic spintronics in zero magnetic field and at CMOS compatible temperatures.² Nonvolatile Néel vector reorientation in the absence of an applied magnetic field is arguably the holy grail of spintronics. It is achieved at CMOS compatible temperatures in prototype device structures of boron doped Cr₂O₃ thin films.

Bio

REFERENCES

¹He, X., Wang, Y., Wu, N., Caruso, A. N., Vescovo, E., Belashchenko, K. D., Dowben, P. A. & Binek, C. Robust isothermal electric control of exchange bias at room temperature. *Nat Mater* **9**, 579-585, doi:10.1038/Nmat2785 (2010).

² Mahmood, A., Echtenkamp, W., Street, M., Wang, J.-L., Cao, S., Komesu, T., Dowben, P. A., Buragohain, P., Lu, H., Gruverman, A., Parthasarathy, A., Rakheja, S. & Binek, C. Voltage controlled Néel vector rotation in zero magnetic field. *Nature Communications* **12**, 1674, doi:10.1038/s41467-021-21872-3 (2021).

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