



סמינר מחלקתי – הנדסת חומרים

הנכם מוזמנים בזאת לסמינר מחלקתי
אשר יתקיים ביום ה', 24 באפריל 2025, כו' בניסן תשפ"ה,
בשעה 11:00, בניין 51 באולם 15

The Ramp Reversal Memory – A perspective after nearly a decade

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The ramp reversal memory (RRM) is a non-volatile memory effect we discovered originally in correlated oxides with temperature-driven insulator-metal transitions (IMT), such as VO_2 , V_2O_3 and NdNiO_3 . The memory appears as a resistance increase at predefined temperatures that are set or erased by simple heating-cooling (i.e., ramp-reversal) protocols. The characteristics of this memory effect do not coincide with any previously reported history or memory effects.

In this talk we will review our current understanding of the RRM. We will overview the main properties of the memory effect, show how the memory appears in different systems, discuss what features are system dependent, and review the ingredients required for the effect to arise. We will conclude that the RRM is indeed an emergent phenomenon, where the underlying physical mechanism can change from system to system. Thus, it is expected to appear in additional materials with the relevant ingredients.

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[2] E. Anouchi, N. Vardi, Y. Kalcheim, I. K. Schuller, and A. Sharoni, *Universality and microstrain origin of the ramp reversal memory effect*, *Phys. Rev. B* **106**, 205145 (2022).

[3] A. Fried, E. Anouchi, G. Cohen Taguri, J. Shvartzberg, and A. Sharoni, *Film morphology and substrate strain contributions to ramp reversal memory in VO_2* , *Phys. Rev. Mater.* **8**, 015002 (2024).

[4] A. Fried, O. Gotesdyner, I. Feldman, A. Kanigel, and A. Sharoni, *Ramp Reversal Memory in Bulk Crystals of 1T-TaS_2* , arXiv:2409.11977 (2024).

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