

Abstract Submitted
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Spin Circuit Representation for Spin Pumping Phenomena¹ KUNTAL ROY, SUPRIYO DATTA, School of Electrical and Computer Engineering, Purdue University — There has been enormous progress in the field of spintronics and nanomagnetism in recent years with the discovery of many new materials and phenomena and it remains a formidable challenge to integrate these phenomena into functional devices and evaluate their potential. To facilitate this process a modular approach has been proposed whereby different phenomena are represented by spin circuit components [1]. Unlike ordinary circuit components, these spin circuit components are characterized by 4-component voltages and currents (one for charge and three for spin). In this talk we will (1) present a spin circuit representation for spin pumping phenomena, (2) combine it with a spin circuit representation for the spin Hall effect [2] to show that it reproduces established results obtained earlier by other means, and finally (3) use it to propose a possible method for enhancing the spin pumping efficiency by an order of magnitude through the addition of a spin sink layer. [1] Kerem Camsari, Samiran Ganguly and Supriyo Datta, Modular Approach to Spintronics, <https://nanohub.org/groups/spintronics> [2] Seokmin Hong, Shehrin Sayed and Supriyo Datta, Spin Circuit Representation for the Spin Hall Effect, in review.

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