

Abstract Submitted
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Signal propagation in time-dependent spin transport¹ YAO-HUI ZHU, HANS CHRISTIAN SCHNEIDER, University of Kaiserslautern — Signal propagation in magnetic multilayers is studied using a macroscopic theory of time-dependent spin transport. Our analysis shows that time-dependent spin transport possesses a wave-diffusion duality, i.e., it is wave like for fast signal modulation and reduces to the diffusion equation for slow modulation [1]. The wave-like characteristics allow us to extract a finite spin signal-propagation velocity, which cannot be done using the spin diffusion equation. Applications to different switching scenarios for collinear and noncollinear spin transport through magnetic multilayers will be discussed.

[1] Y.-H. Zhu, B. Hillebrands, H. C. Schneider, Phys. Rev. B **78**, 054429 (2008)

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