Abstract Submitted
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Towards high-frequency operation of spin-lasers[1] PAULO E. FARIA JUNIOR, SUNY Buffalo / Universidade de Sao Paulo, Brazil, GAOFENG XU, SUNY Buffalo, JEONGSU LEE, SUNY Buffalo / Universität Regensburg, Germany, NILS C. GERHARDT, Ruhr-University Bochum, Germany, GUILHERME M. SIPAHI, SUNY Buffalo / Universidade de Sao Paulo, Brazil, IGOR ZUTIC, SUNY Buffalo — Injecting spin-polarized carriers in lasers enables room-temperature spintronic applications,not limited to magnetoresistance. While steady-state operation of such spin-lasers has already revealed an improved operation as compared to their conventional (spin-unpolarized) counterparts [1-4], the main opportunities lie in their-high frequency operation [5-9]. We systematically show how our accurate electronic structure and microscopic gain calculations could guide the improved dynamical operation of spin-lasers at modulation frequencies beyond what is possible in conventional lasers [6-9]. [1] J. Rudolph et al., Appl. Phys. Lett. 87, 241117 (2005). [2] M. Holub et al., Phys. Rev. Lett. 98, 146603 (2007). [3] J. Frougier et al., Appl. Phys. Lett. 103, 252402 (2013). [4] J.-Y. Chen et al., Nature Nanotech. 9, 845 (2014). [5] J. Lee et al., Appl. Phys. Lett. 97, 041116 (2010). [6] N. C. Gerhardt, et al., Appl. Phys. Lett. 99, 151107 (2011). [7] H. Hopfner et al., Appl. Phys. Lett. 104, 022409 (2014). [8] G. Boeris et al., Appl. Phys. Lett. 100, 121111 (2012). [9] J. Lee et al., Appl. Phys. Lett. 105, 042411 (2014).

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