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Is MOKE a Viable Method for Probing Spin Hall Effect in Metals?. YUDAN SU, HUA WANG, JIE LI, CHUANSHAN TIAN, RUQIAN WU, XIAOFENG JIN, Y.R. SHEN, Department of Physics, Fudan University — In a recent publication, van't Erve et al. (Appl. Phys. Lett. 104, 172402(2014)) reported observation of the magneto-optical Kerr effect (MOKE) from the spin Hall effect (SHE) in beta-tungsten (β-W) and platinum (Pt) films. This is most interesting, as it would provide an alternative means to probe SHE in metals. However, despite repeated attempts on different samples, we were unable to find a true SHE-induced MOKE signal from β-W and Pt. Both our theoretical estimate and experimental results indicate that the MOKE signal from SHE in metals ought to be very weak, below the detection limit of currently available MOKE setups. The false MOKE signal observed by van't Erve et al. likely came from the unbalanced ac heating effect.

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