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【605】 Orbital-torque-induced switching of perpendicular magnetization

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Spin-orbit torque (SOT) has been intensively studied to realize energy efficient magnetization switching in spintronic devices. Recently, proposed orbital torque (OT) suggested that the large SOT can be generated even in weakly spin-orbit-coupled light metals by the orbital current. It is a consequence of the orbital Hall and/or orbital-Rashba effect and subsequent orbital-to-spin conversion via spin-orbit coupling. In this talk, we present the current-induced switching of perpendicular magnetization via orbital torque, which is efficiently tailored by orbital-to-spin conversion engineering. Our study suggests that the orbital current can be utilized to further enhance the magnetization switching efficiency in spin-orbit-torque-based spintronic devices.

Theoretical Work

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