Microscopic calculation of Rashba spin-orbit torques JUNJI FU-
JIMOTO, Osaka University, HIROSHI KOHNO, Nagoya University — We study
current-induced spin-orbit toques (Rashba torques) in a two- dimensional Rashba
ferromagnet, which may model the interface of the ferromagnetic and heavy param-
agnetic metals. Using the linear response theory and the Green's function method
and treating the nonmagnetic impurity scattering in the self-consistent Born ap-
proximation with ladder-type vertex corrections, we calculate the Rashba torques
as functions of magnetization direction, strength of the spin-orbit coupling, and the
chemical potential. It is found that the Rashba torques are independent of the di-
rection of the magnetization for a parabolic dispersion in good metals, whereas they
show a clear angular dependence for a tight-binding model. We will discuss our
results comparing with other theoretical calculations [C. O. Pauyac, X. Wang, M.
Chshiev and A. Manchon, Appl. Phys. Lett. **102**, 252403 (2013), K.-S. Lee, et al,
arXiv:1409.5600] and the recent experiments.

Junji Fujimoto
Osaka University

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