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Berry curvature in magnetostatic waves and associated semiclassical dynamics of wavepackets SHUICHI MURAKAMI, RYO MATSUMOTO, Tokyo Inst of Tech - Tokyo, RYUICHI SHINDOU, Peking University — Magnons in ferromagnets form band structure and thus they are associated with Berry curvature in momentum space. This Berry curvature of magnons causes various interesting phenomena such as thermal Hall effect [1,2]. In particular the magnetic dipolar interaction can be regarded as a spin-orbit coupling in a wider sense and thus can give rise to nonzero Berry curvature. In my presentation, we describe the magnetostatic waves (magnons) in terms of the bosonic Bogoliubov-de Gennes Hamiltonian [3] and show how the magnon thermal Hall conductivity behaves as a function of magnetic field and temperature. We also present how this Berry curvature affects the dynamics of the magnon wavepacket within semiclassical theory. For example, the wavepacket rotates by itself and will give rise to a radial charge distribution due to relativistic effect. We also show how the magnon trajectory is affected by the Berry curvature. [1] R. Matsumoto, S. Murakami, Phys. Rev. Lett. 106, 197202 (2011). [2] R. Matsumoto, S. Murakami, Phys. Rev. B 84, 184406 (2011). [3] R. Matsumoto, R. Shindou and S. Murakami, preprint.

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