Thermal Hall Effect of Spins in a Paramagnet HYUNYONG LEE,
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746, Korea, PATRICK LEE, Department of Physics, Massachusetts Institute of
Technology, Cambridge, Massachusetts 02139, USA — Theory of Hall transport of
spins in a correlated paramagnetic phase is developed. By identifying the thermal
Hall current operator in the spin language, which turns out to equal the spin chirality
in the pure Heisenberg model, various response functions can be derived straightfor-
wardly. Subsequent reduction to the Schwinger boson representation of spins allows
a convenient calculation of thermal and spin Hall coefficients in the paramagnetic
regime using self-consistent mean-field theory. Com- parison is made to results from
the Holstein-Primakoff reduction of spin operators appropriate for ordered phases.

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