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Study of axial magnetic effect

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The axial magnetic field, which couples to left- and right-handed fermions with opposite signs, may generate an equilibrium dissipationless energy flow of fermions in the direction of the field even in the presence of interactions. In this report numerical observation of the Axial Magnetic Effect in SU(2) lattice gauge theory is presented. The temperature behavior of the Axial Magnetic Effect is studied. It is shown that in the confinement (hadron) phase the effect is absent. In the deconfinement transition region the conductivity quickly increases, reaching the asymptotic T^2 behavior in a deep deconfinement (quark-gluon plasma) phase.

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