Abstract Submitted
for the MAR97 Meeting of
The American Physical Society

Sorting Category: 15.h

Giant Ferromagnetic **Hall Coefficient** in $La_{0.5}Ca_{0.5}CoO_3$ **Epitaxial Films and** Ceramics ARKADII V. SAMOILOV, NAI-CHANG YEH, 114-36 Department of Physics, California institute of Technology, Pasadena, California 91125, RICHARD P. VASQUEZ, Center for Space Microelectronic Technology, Jet Propulsion Laboratory, California. Institute of 7'ethnology, Pasadena, CA 91109 - Unlike in weakly magnetic materials, the Hall resistivity in ferromagnets is proportional to the magnetization M rather than to the magnetic induction B, with the coefficient of proportionality called ferromagnetic, or anomalous, Hall coefficient R_s. We report a giant ferromagnetic Hall coefficient, R_s, in $La_{0.5}Ca_{0.5}CoO_3$ epitaxial films and ceramics. The value of R_s significantly exceeds those of other known single-phase ferromagnetic metals. Although existing theory can correctly describe tile temperature dependence of the' anomalous Hall coefficient in both the ferromagnetic and paramagnetic states, it fails to account for the absolute value by many orders of magnitude. We suggest that the coexistence Of high- and low- spin configurations in the perovskite cobaltites, which gives rise to the magnetic percolation behavior ill $La_{1-x}Ca_xCoO_3$, may be responsible for the giant R_s.

[X] Prefer Oral Session
[ ] Prefer Poster Session

Arkadii Samoilov
samoilov@cco.caltech.edu
California Institute of Technology

Date submitted: December 4, 1996 Electronic form version 1.2