

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Response Functions and Collective Oscillations of a Two Dimensional Electron Gas in the Presence of Rashba Spin-Orbit Coupling**

GEORGE SIMION, GABRIELE F. GIULIANI, Physics Department, Purdue University — Various response functions and the spectrum of the collective excitations of a two dimensional electron liquid in the presence of Rashba type spin-orbit coupling have been studied within time dependent mean field formalism. Of particular interest are the results concerning the in-plane and out-of- plane spin susceptibility of the paramagnetic phase and the corresponding spin excitations. As an by product of this analysis we have derived an exact analytical expression for the static density response function which corrects formulas previously appeared in the literature. Approximate analytical expressions have also be derived for the low frequency, long wave length dependence of the same function.

George Simion  
Physics Department, Purdue University

Date submitted: 28 Nov 2005

Electronic form version 1.4