Abstract Submitted
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Three body recombination for electrons in a strong magnetic field: magnetic moment[1] FRANCIS ROBICHEAUX, Auburn University — Using a classical Monte Carlo method, we have computed the three body recombination (two free electrons and a proton scattering into one free electron and a Hydrogen atom: $e + e + p \rightarrow H + e$) in strong magnetic fields. The proton is fixed in space but the electrons are allowed their full, 3-dimensional motion. We investigate recombination for temperatures and fields similar to those used in recent experiments that generated anti- Hydrogen. The present rate is compared to that when the electrons' motion is given by the guiding center approximation, validating previous results at low temperature and demonstrating the breakdown of this approximation at higher temperature. Unlike the $B = 0$ case, strong B gives preferential recombination to atoms with positive magnetic moment. Also, the canonical angular momentum in the field direction is often negative even when the magnetic moment is negative. Both results affect the trapping of anti-Hydrogen using spatially dependent magnetic fields.

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