

Abstract Submitted
for the TSF17 Meeting of
The American Physical Society

Antihydrogen Atom Formation via Capturing of Positron by Antiproton Beam Traveling Through Electron-Positron Plasma¹ CAT TRAN, CARLOS ORDONEZ, Univ of North Texas — A simulation is created to study the formation of an antihydrogen atom via the capturing by an antiproton of a positron from an electron-positron magnetobound pair when it travels through an electron-positron plasma. A magnetobound pair of electron-positron is known as magnetobound positronium. It has been previously discovered through simulation that a collision between electron and positron pair can result in a giant-cross-magnetic field drift in a constant magnetic field (e.g 1 T). This drift is mutual and is orthogonal to the constant magnetic field. This simulation model is to show that, as an antiproton travels through a magnetobound positronium's proximity, the antiproton can capture the positron and form an antihydrogen atom; at the same time, the electron is expelled out of its positronium magnetobound state due to its opposite charge. The result is a guiding-center drift antihydrogen atom.

¹This material is based upon work supported by the National Science Foundation under Grant No. PHY-1500427 and by the Department of Energy under Grant No. DE-FG02-06ER54883.

Cat Tran
Univ of North Texas

Date submitted: 21 Sep 2017

Electronic form version 1.4