Abstract Submitted
for the NWS09 Meeting of
The American Physical Society

Protohalo Constraints to the Resonant Annihilation of Dark Matter FRANCIS-YAN CYR-RACINE, UBC, STEFANO PROFUMO, UC Santa Cruz, KRIS SIGURDSON, UBC — It has recently been argued that the PAMELA, ATIC and PPB-BETS data showing a anomalous excess of high-energy cosmic ray positrons and electrons could be explained by annihilating dark matter in the galactic halo with an enhanced cross section relative to that in the early universe. We point out that having such a large annihilation cross section could trigger a burst of dark matter annihilation in the first protohalos that form at redshift $z \sim 100 - 200$. We show that bounds from the diffuse gamma ray background and from the reonization of the intergalactic medium give rise to strong constraints on the zero temperature dark matter cross section which disfavor this interpretation of the PAMELA, ATIC and PPB-BETS results.

Francis-Yan Cyr-Racine
UBC

Date submitted: 17 Apr 2009 Electronic form version 1.4