Abstract Submitted
for the TSF09 Meeting of
The American Physical Society

Low-Background Screening for Rare Event Experiments Using a Multi Parallel Plate Chamber[1] CLEMENT SOFKA, Texas A&M University — Rare event searches, such as double beta decay and direct dark matter (DM) detection, present a host of challenges in detector design and implementation. One of the most limiting factors is the presence of background radiation which originates from radioactive isotope impurities in the materials used to construct the detector. We present a unique method for detecting ultra-low levels of contamination by placing voltages of alternating polarity on several stacked parallel plates separated by a narrow gap in a pressurized gas. Our design exploits the geometry of the well-known single-layer parallel plate chamber (PPC), but uses multiple plates made out of the material being measured. The design, efficiency, and anticipated sensitivity will be discussed.

[1]This work is funded by DOE grant DE-FG02-06ER86287.

Clement Sofka
Texas A&M University

Date submitted: 12 Oct 2009 Electronic form version 1.4