Abstract Submitted
for the TSS13 Meeting of
The American Physical Society

Detector Design Studies for High Precision Particle Physics Experiment TIMOTHY WATSON, SAMANTHA LACOMBE, AMIT BASHYAL, YVONNE YING, University of Texas Arlington — High-energy physics is the field of physics utilizing powerful high-energy particle accelerators to probe and understand the fundamental particles of nature and the forces between them. Among the great accomplishments of the field of particle physics is a theoretical model that explains many of the phenomena we see in our universe: the Standard Model. While the Standard Model has been very successful in describing nature, it is necessary to push the limits of this model in an effort to truly understand its predictability. This search for new physics beyond the Standard Model requires the construction of next generation particle detectors capable of extreme high-precision measurements. The ORKA experiment, currently in the proposal stage, will search for rare kaon decays that may contradict Standard Model predictions and presents a paradigm changing new physics. In this talk, I will outline in detail design studies for the range stack, an essential detector component UTA is responsible for, incorporating novel components, specifically silicon photomultipliers (SiPMs) in place of photomultiplier tubes (PMTs) and the Gas Electron Multiplier (GEM) technology.

Timothy Watson
University of Texas Arlington

Date submitted: 08 Mar 2013 Electronic form version 1.4