Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Progress on rare K and π decays from BNL E949 ILEKTRA A. CHRISTIDI, Department of Physics and Astronomy, Stony Brook University, E949 COLLABORATION — The E949 experiment at BNL's AGS has improved upon the already high π^o detection efficiency of the previous E787 experiment by as much as an order of magnitude. This enhanced photon detection efficiency enables significant improvements in background rejection and sensitivity for the decays $\pi^o \to \nu\overline{\nu}$ and $K^+ \to \pi^+\nu\overline{\nu}$ in the kinematic region of $p_{\pi^+} < 195MeV/c$ ("PNN2"). New results and progress in these modes will be presented. The helicity suppressed $\pi^o \to \nu\overline{\nu}$ decay gives information on neutrino mass, new weakly interacting particles and cosmological models. The experimental method and analysis strategy for the detection of this decay will be described, as well as the impact of the new results on the SM and beyond. This measurement is done as a byproduct of the primary mode of E949: $K^+ \to \pi^+\nu\overline{\nu}$. Progress on the search for this mode in the kinematic region of $p_{\pi^+} < 195MeV/c$ ("PNN2") will also be presented.

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Date submitted: 18 Jan 2005 Electronic form version 1.4