Abstract Submitted
for the APR15 Meeting of
The American Physical Society

Vector and Axial Vector Pion Form Factors[1] MICHAEL VITZ, Univ of Virginia, PEN COLLABORATION — Radiative pion decay $\pi^+ \to e^+\nu\gamma$ (RPD) provides critical input to chiral perturbation theory (χPT). Aside from the uninteresting "inner bremsstrahlung" contribution from QED, the RPD rate contains "structure dependent" terms given by F_V and F_A, the vector and axial-vector pion form factors, respectively. The two appear in the decay rate in combinations $F_V - F_A$ and $F_V + F_A$, i.e., in the so-called SD^- and SD^+ terms, respectively. The latter has been measured to high precision by the PIBETA collaboration.[2] We report on the analysis of new data, measured by the PEN collaboration[3] in runs between 2008 and 2010 at the Paul Scherrer Institute, Switzerland. We particularly focus on the possibility of improvement in the determination of the SD^- term. Precise determinations of F_V and F_A test the validity of the CVC hypothesis, provide numerical input for the $l_9 + l_{10}$ terms in the χPT lagrangian, and constrain potential non-$(V-A)$ terms, such as a possible tensor term F_T.

[1]NSF grants PHY-0970013, 1307328, and others.
[2]M. Bychkov et al, Phys. Rev. Lett., **103**, 051802 (2009), http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.103.051802
[3]http://pen.phys.virginia.edu

Michael Vitz
Univ of Virginia

Date submitted: 09 Jan 2015 Electronic form version 1.4