

Workshop on Flux Measurement and Determination in the Intensity Frontier Era Neutrino Beams

Organizing Committee

D. Naples and V. Paolone (U. Pitt)

Many Thanks to external members:

Alysia Marino (U. of Colorado)

K. Lang (U. Texas, Austin)

December 6-8, 2012

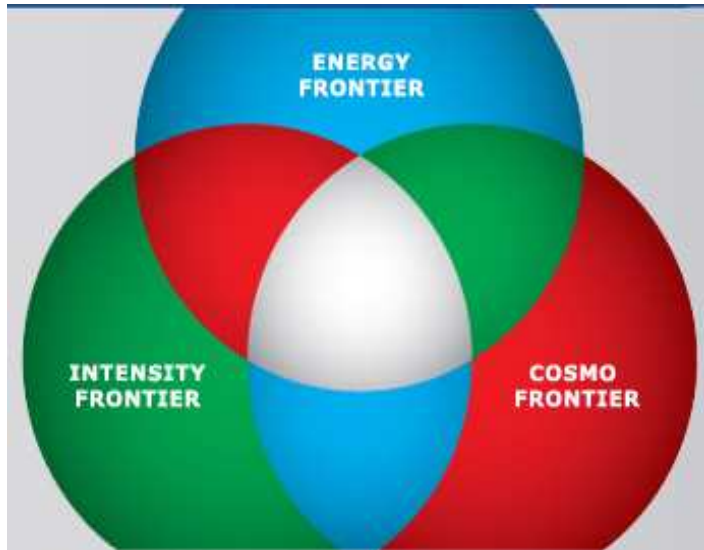


Pitt-PACC Welcomes Yinz all to Pittsburgh!



Pitt-PACC

PITTSburgh Particle physics, Astrophysics, and Cosmology Center



PITT PACC coordinates and enhances local activities in experimental, observational, and theoretical particle physics, astrophysics, and cosmology.

Director: Tao Han

Members from the local astrophysics, cosmology, particle physics community.

- ▶ Held 5 previous interdisciplinary workshops in the past year (Higgs Boson, Loop fest, Type Ia supernova in the infrared, New physics at LHC, Exploring Low-mass dark matter candidates.) ... and more to come!

Why a Workshop on Flux Determination?

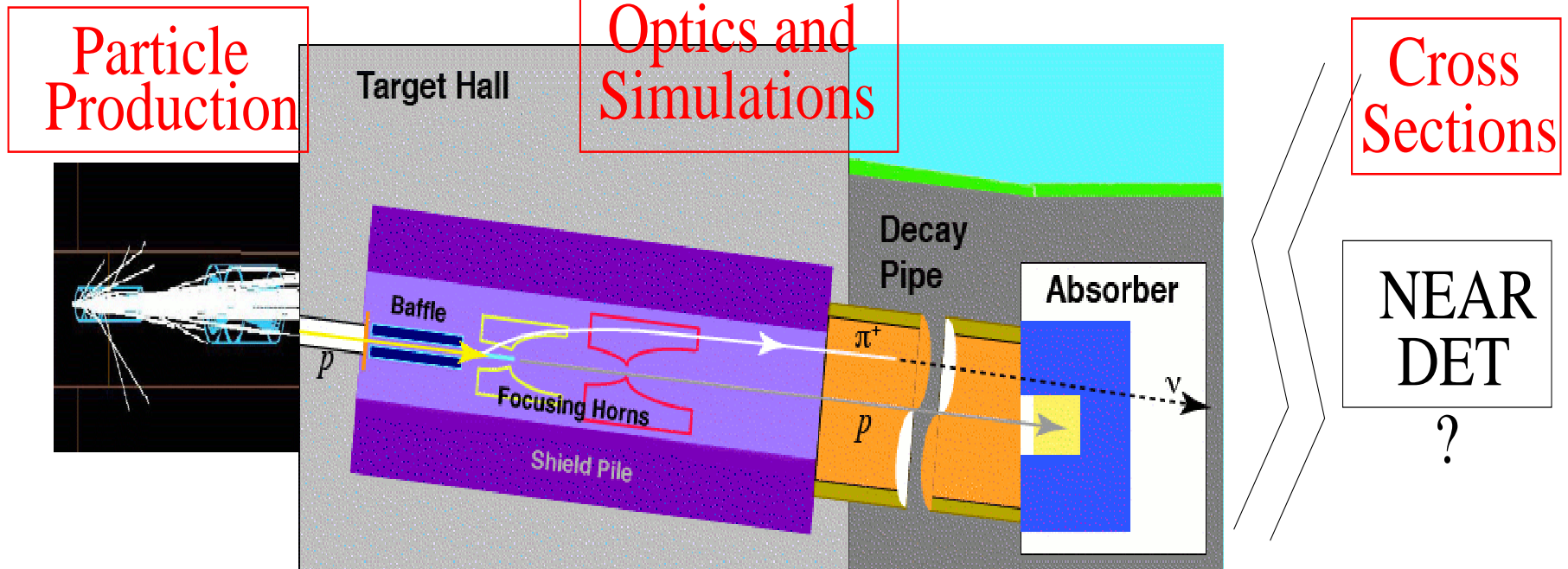
Vision: Full exploration of neutrino oscillations: mass hierarchy, CP violation, and precision measurements with sensitivity to new physics.



Requires an Unprecedented Neutrino Beam

- ▶ **Baseline 1300 km** to cover δ_{CP} parameter space.
 - ▶ **Broad-band** to cover first (2.5 GeV) and if possible second (0.8 GeV) oscillation max. \Rightarrow Large diameter decay pipe to collect low energy pions.
 - ▶ **High purity** \Rightarrow shorter decay pipe to reduce high-energy tail and μ decay in flight.
 - ▶ **High-intensity:** capable of handling >2.3 MW from Project X.
 - ▶ **Sign-selected** to run antineutrinos.
 - ▶ **Tunable** to optimize flux and allow study of systematics.
- ▶ **Challenge faced \Rightarrow understand the flux at the level required to realize this physics vision.**

Focus on Key Ingredients



Thank You for Coming !!!

- Stimulating talks
- Lively and fruitful discussions

Outcome

- ▶ **better understanding of flux ingredients**
- ⇒ **how well we can determine the flux in Intensity Frontier Era neutrino beams.**