

# Horn – Cone to Parabola

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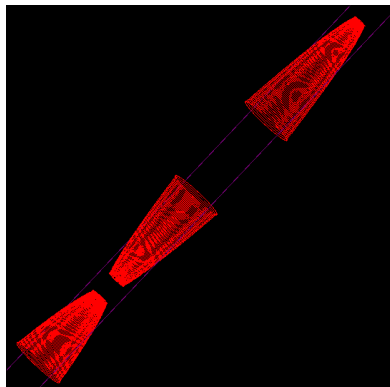
November 5, 2015

# Motivation

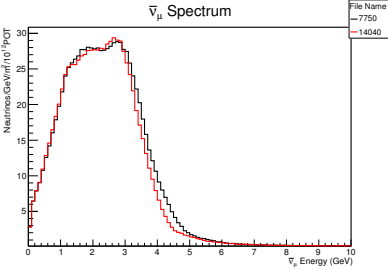
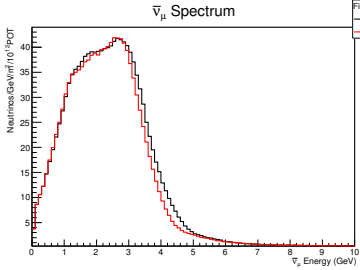
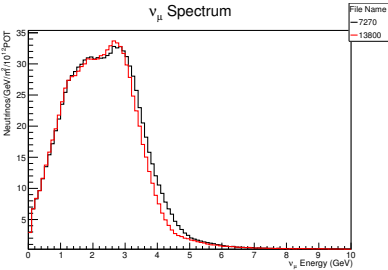
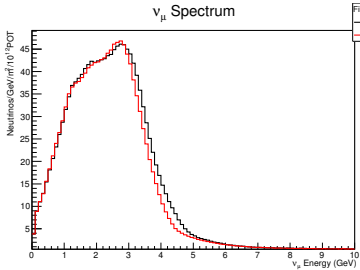
- ▶ Neutrino beam optimization
- ▶ Used conical segments for simplicity
- ▶ Easy to change to parabola
- ▶ “parabola” more “lens” like

# Simple Method

- ▶ Polycone Horn
- ▶ List of radius, thickness and z
- ▶ Fit parabola through pairs of r and z
- ▶ Add segments to the polycone with 1 mm radial spacing
- ▶ Use Geant 4.9.6.p04 for direct comparison



# Results



Black is cones, Red is parabola Top + focusing, bottom - focusing  
Left 120 GeV, right 80 GeV