

Michiel Demey for the HERMES Collaboration

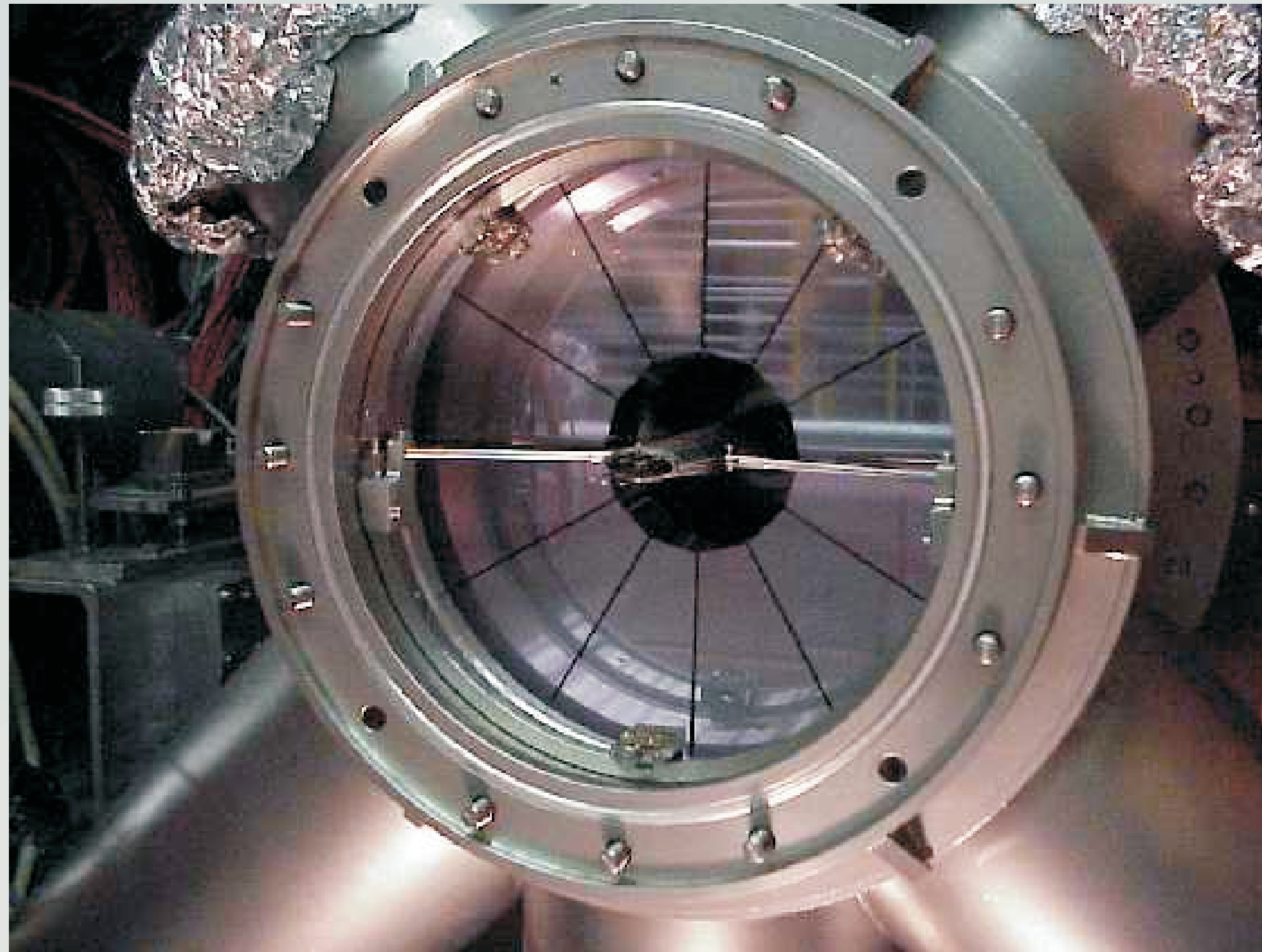
NIKHEF, P.O.Box 41882, 1009 DB Amsterdam, The Netherlands
 michield@nikhef.nl tel.: +31.20.592.2093 fax.: +31.20.592.5155

Lambda Wheels:

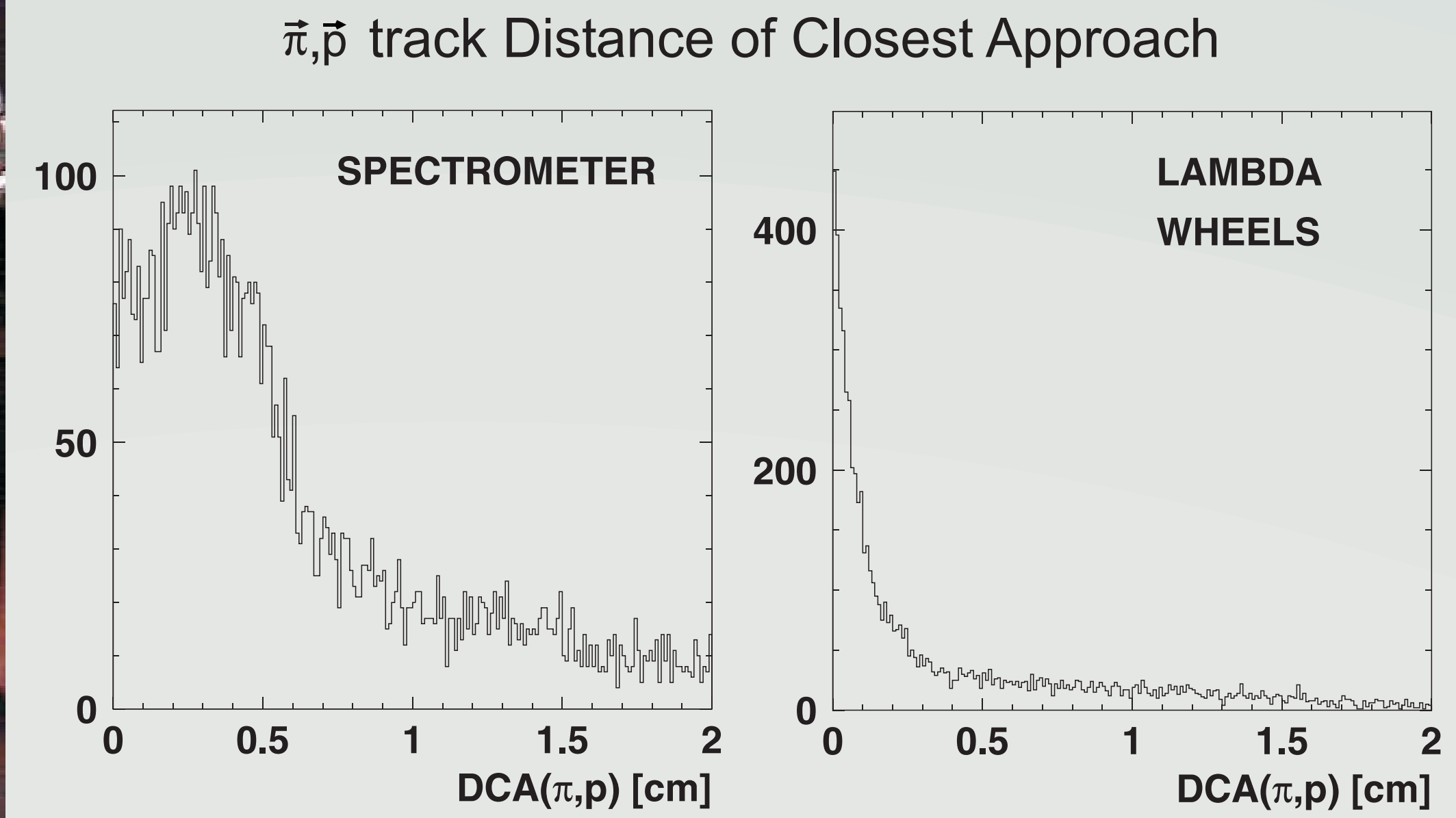
Si: 300 μ m thick, 499 strips/side, 160 μ m pitch, 50 V depletion
 HELIX 2.2: 128 channels, +2 V, 0.35 W power consumption requires external cooling
 Readout and control: Custom made ADC
 TOTAL:
 23952 readout strips, 24 double sided wafers, 192 HELIX chips (68 W heat), 48 ADC's, acceptance: 88, 310] mrad, [0, 2]

Spectrometer:

PID: Ring Imaging CHerenkov, EM Calorimeter and Transition Radiation Detector
 → Hadron/Lepton separation
 → Hadron PID: K 1-15 GeV, p 4-15 GeV
 Tracking: Wirechambers and Drift Vertex Chambers
 → $|x|$ [0, 170] mrad and $|y|$ [40, 140] mrad
 → angular resolution of 0.6 mrad
 → momentum resolution of 0.7-1.25 %

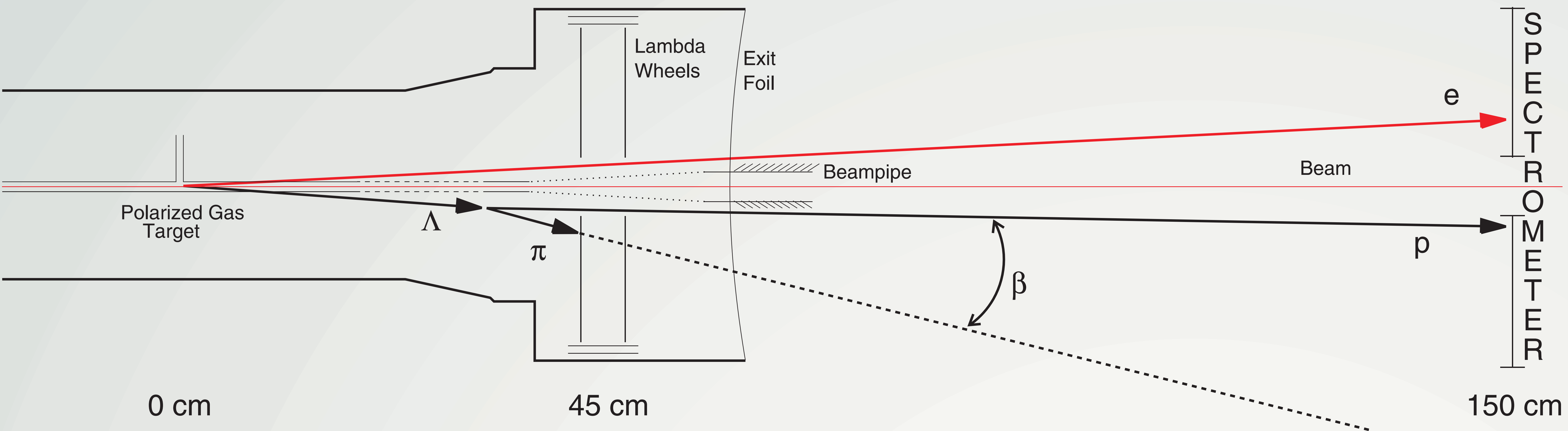


Vertex Resolutions



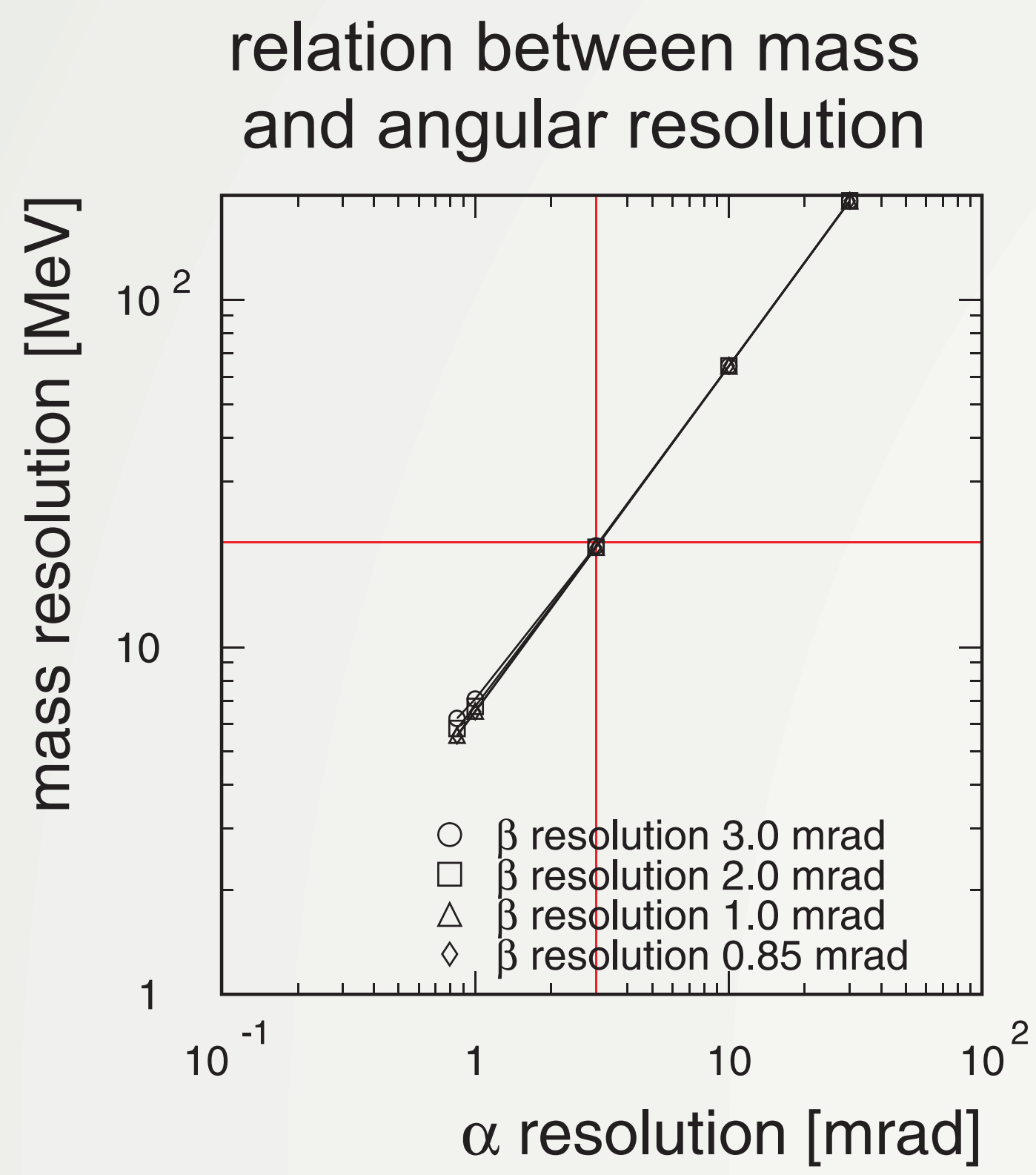
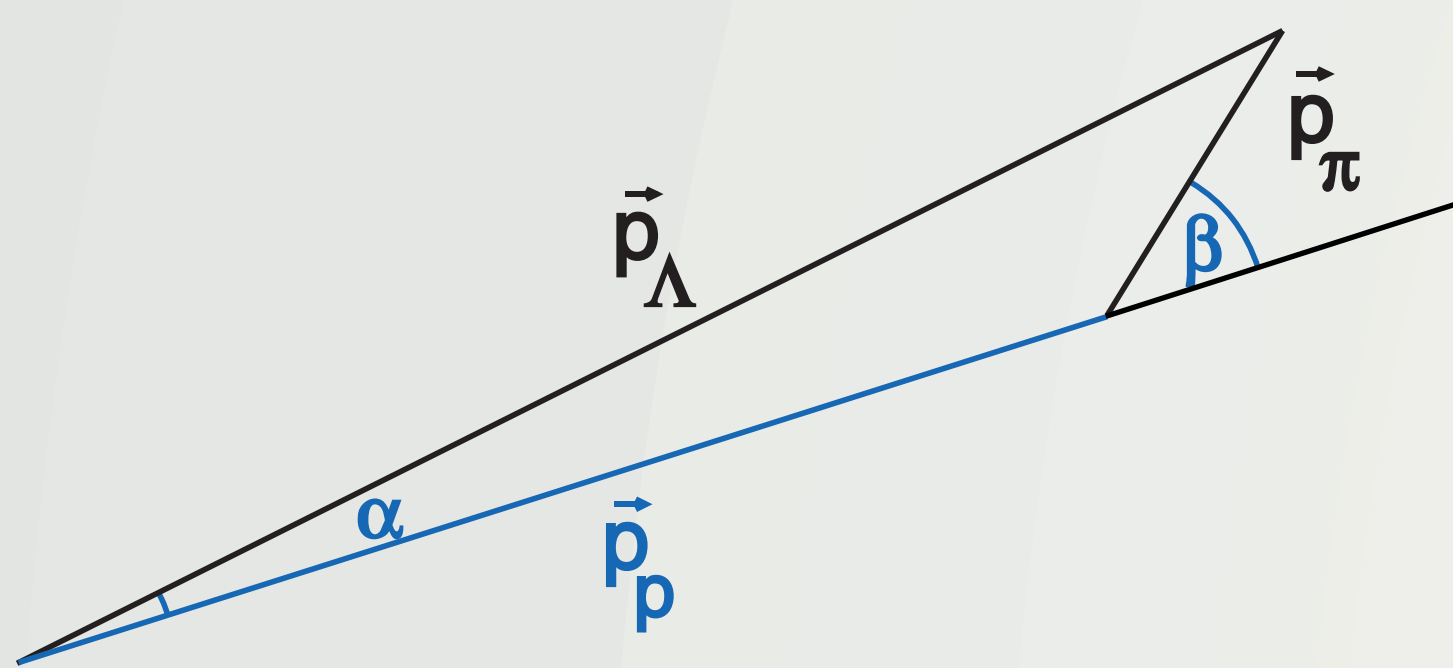
→ factor 8 improvement in vertex resolution

Topology

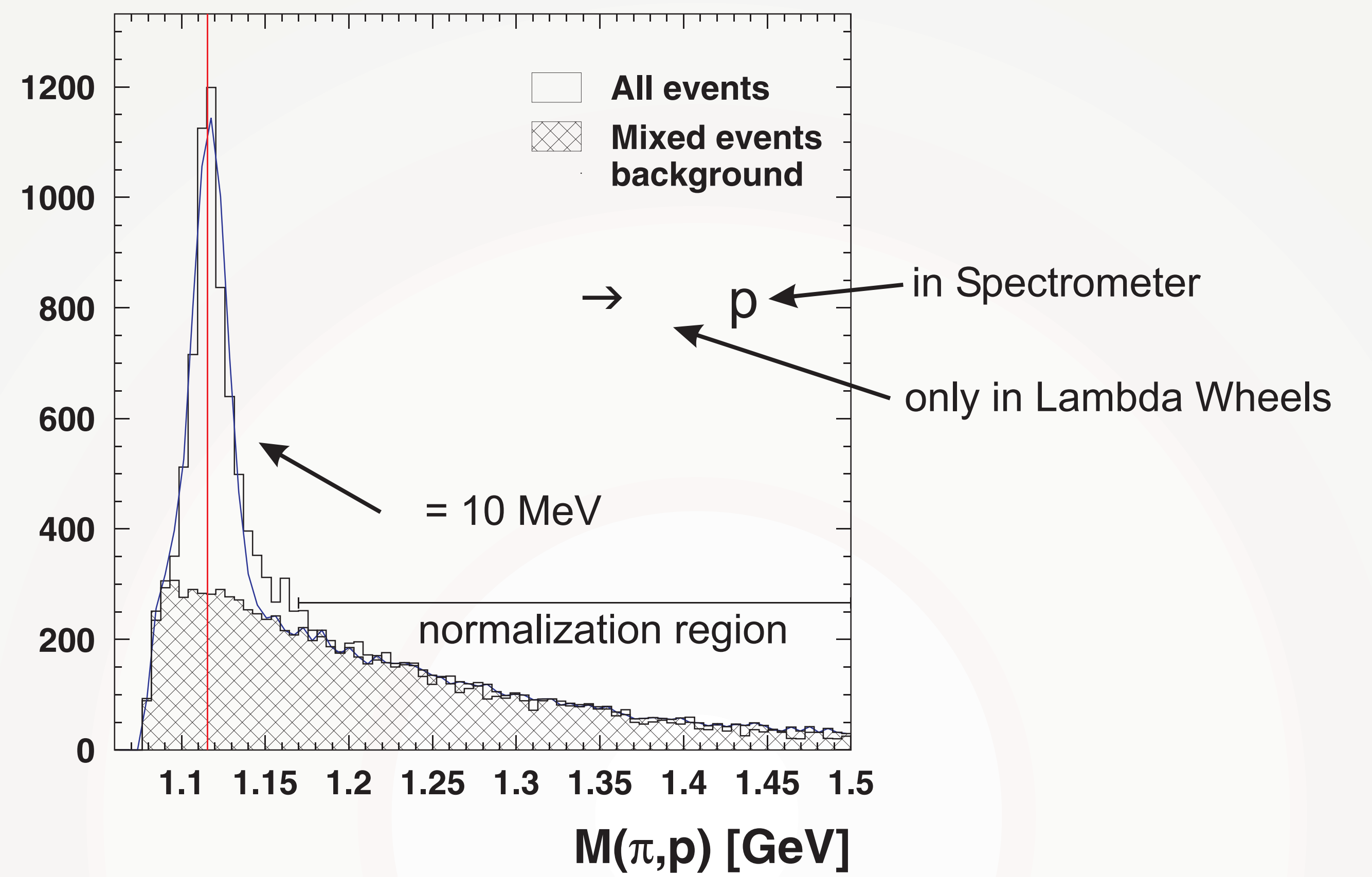


New Reconstruction Method using Lambda Wheels

Momentum triangle defined through proton momentum, and

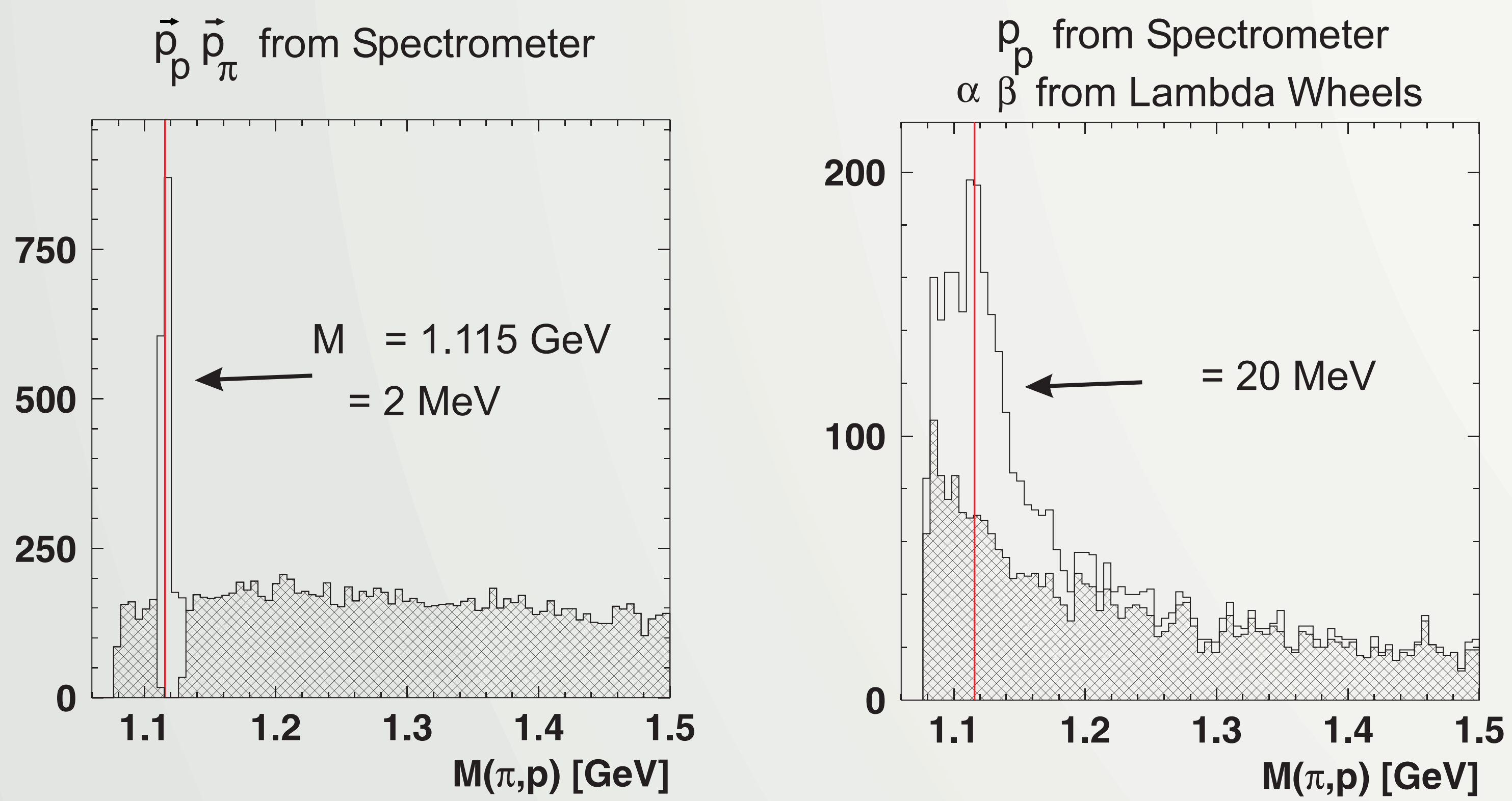


Results



**AT THE EXPENSE OF FACTOR 2 IN RESOLUTION
 GAIN OF FACTOR 8 IN ACCEPTANCE
 ACCESS TO NEW KINEMATIC DOMAIN ($x_F < 0$)**

Compare Reconstruction with Same Tracks



YIELDS (A.U.)

	Spectrometer	Spectrometer + Lambda Wheels
with e	100	140
lepto MC	(100)	(300)
without e	1290	1550