Vector meson measurements at J-PARC 50-GeV PS
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Advanced project at J-PARC 50GeV PS
using 30- 50 GeV p+A reaction at primary beam line
thin (0.1%interaction length) target to reduce background
high intensity (1x10^9–10^10 ppp) beam for high statistics
slowly moving mesons which have large probability of decaying in nuclei

Main goal : 5000–50000 φ -> ee for each target
10-100 times as large as E325’s statistics, in 100 shifts operation
- velocity dependence of ‘modified’ component
- new nuclear targets : proton (CH₅-C subtract), Pb
narrow width -> sensitive to modification
free from ω–φ interference
ω, ρ and J/ψ can be collected at the same time
higher stat. of ω, ρ than E325 with differ A targets
100-1000 J/ψ are expected in 50GeV operation
Normal nuclear density (p+A)
but also highest matter density (A+A, ~20GeV/u) in the future

Spectrometer : two options
A) Reuse of E325 spectrometer or
B) Newly constructed larger acceptance spectrometer
using Gas Electron Multiplier (GEM) as a Cherenkov photon sensor and/or tracker
For higher intensity beam (i.e. high interaction rate) and higher statistics, (B) is needed!

Schematic view of Proposed Spectrometer (B)

J-PARC 50-GeV PS is under construction
( J-PARC : Japan Proton Accelerator Research Complex )

Construction is on going at Tokai, JAPAN
- first beam is planned in 2008 for hyper nuclei experiments.
- 50GeV, 3.3x10^14 ppp, 15μA, 3.4s repetition/0.7s duration
  (30GeV, 2x10^14 ppp, 9μA ,1.0s duration at phase-1)
- primary beam line is under discussion for phase-1 (LoI No. 14)
- heavy ion acceleration is under discussion for phase-2 or after
http://www-ps.kek.jp/jhf-np/index_e.html

Development of GEM at CNS, U-Tokyo

Electro ID: Two stage operation of Gas Cherenkov and Lead Glass

Gain curve using X-ray source
Made in CERN (upper) & made in Japan (lower) has been tested.

Cross section of GEM foil

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