

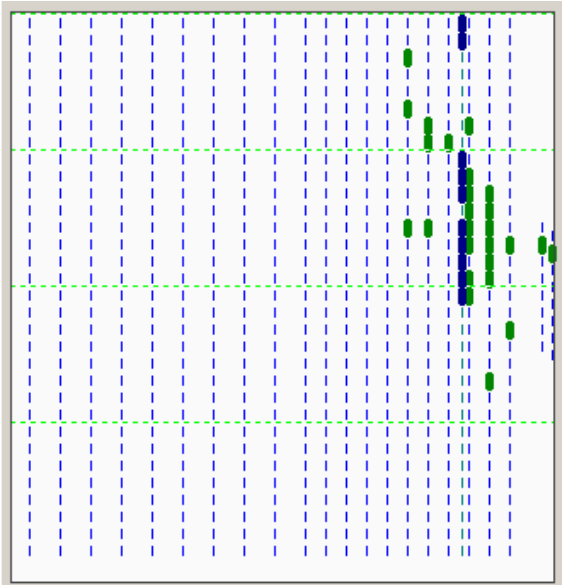
Muon System as PID

(G.Alexeev, A.Verkhnev for JINR/Dubna group)

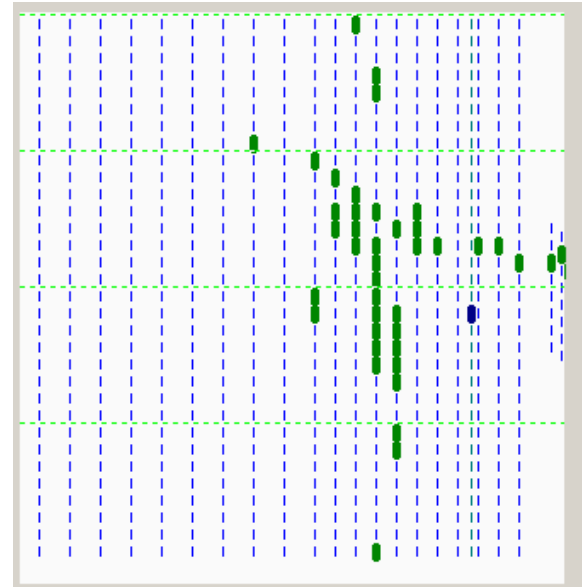
- * **PANDA Muon System based on range system technique is a good PID system for muon-to-hadron separation**
- * **It works in full energy range of secondary particles at PANDA (0,5 ~ 10 GeV)**
- * **It resolves muons and hadrons with ~ 100% efficiency (zero hadron contamination) above ~ 1 GeV by obviously different response pattern**
- * **Separation of muons vs pions (the main rival) below 1 GeV is less efficient and requires test beam measurements for calibration**
- * **Fake muons from pion-to-muon decay may not be recognized as such by Muon System working in 'stand along' mode**

BEAM: e, μ, π, p

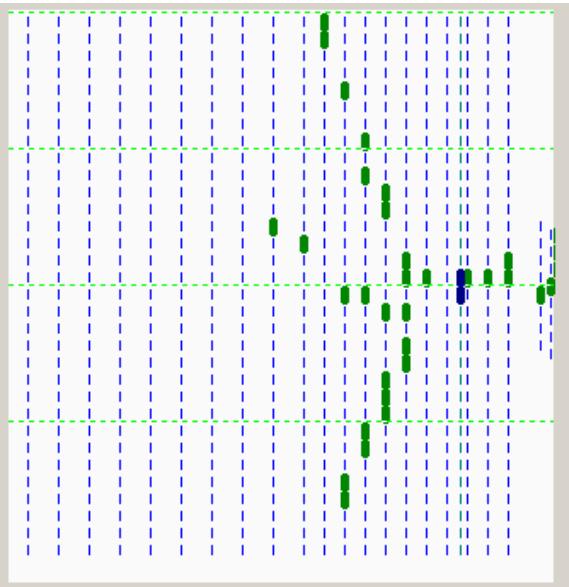
5 GeV/c, trigger: S1 (\varnothing 11,5 cm) & S2 (\varnothing 3,5 cm)



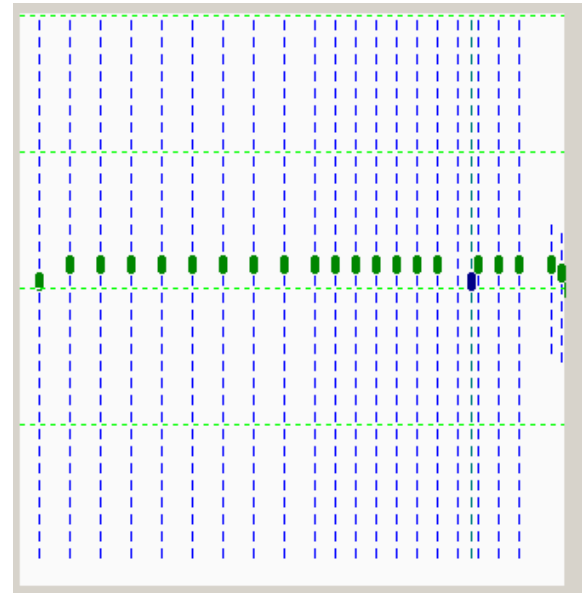
e



h



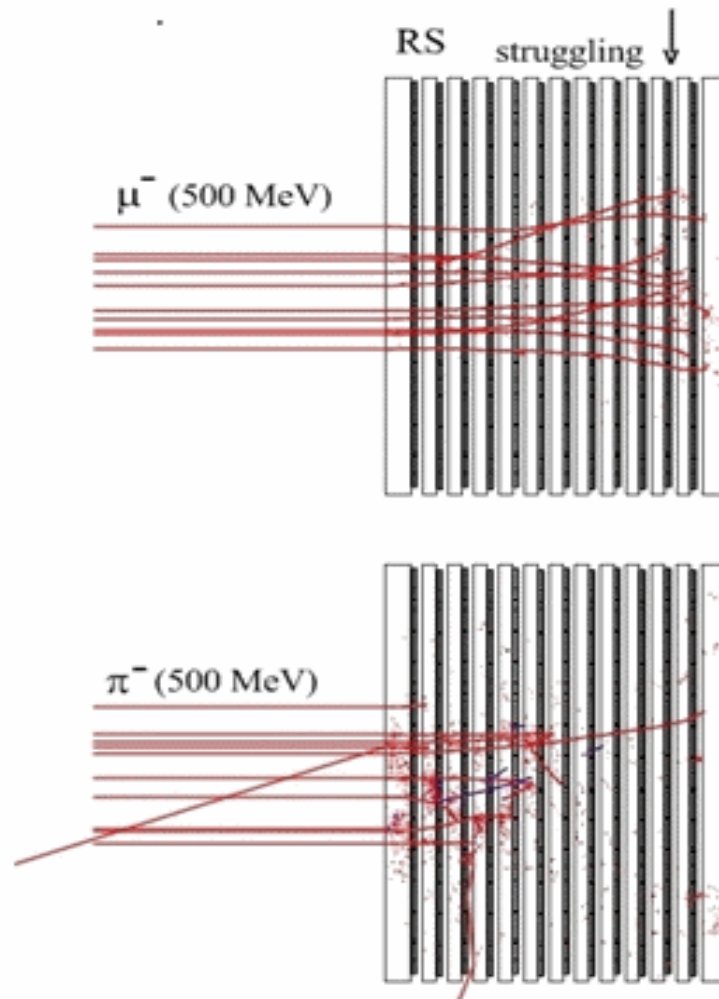
h



μ

Low energy case

RS response to muons and pions with initial kinetic energy of 500 MeV; MC sample for 20 events is shown for demonstration



Test beam results (preliminary)

EPJ WoC, Volume 177 (2018) 04001

Run 605, autumn 2017
momentum = 0.5 GeV/c

Selection -> after layer #7:

22% - pion contamination and
93% - muon efficiency

FairBoxGenerator, PandaROOT
E = 0.5 GeV/c

Selection -> after layer #7:

27% - pion contamination and
99% - muon efficiency

