

## J-PARC Hadron Hall : EXPERIMENTAL REPORT on RUN#45

		<b>Date(submitted)</b>	2012/12/27
<b>Group</b>	E15	<b>Beam line</b>	K1.8BR
<b>Reporter</b>	<b>Name</b>	<b>e-mail address</b>	
	F.Sakuma (RIKEN)	sakuma@ribf.riken.jp	
<b>Experimenters</b>	Kyoto-U: Y.Sada Osaka-U: S.Enomoto, K.Inoue, S.Kawasaki, H.Noumi, T.Yamaga RIKEN: Y.Ma, F.Sakuma TITECH: M.Tokuda U-Tokyo: T.Hashimoto, M.Sato		
<b>Summary and Results</b> Production target : Au  ✓ beam-line/detector/trigger tuning @ -1.0 GeV/c $\pi/K/p$ [K1.8ES1= +/-250kV] Dec.17 ✓ beam-line, detector, and trigger check ✓ beam-line (magnets and slits) tuning  ✓ beam-line tuning, target empty run @ -1.0 GeV/c $\pi/K/p$ [K1.8ES1= +/-250kV] Dec.19-20 ✓ beam-line (magnets and slits) tuning ✓ target empty run for -1.0 GeV/c $\pi/K$  ✓ beam-line tuning, $^3\text{He}$ run @ -1.0GeV/c $\pi/K/p$ [K1.8ES1= +/-250,275kV] Dec.21-22 ✓ beam-line (magnets and slits) tuning ✓ $^3\text{He}$ run for -1.0 GeV/c $\pi/K$			
<b>SCHEDULED and EXECUTED MACHINE TIME, BEAM CONDITION, DOWN TIME, Priority etc.</b> ■ Dec.17 0:10 ~ Dec.17 9:52: tot 9:42 (including 1:48 downtime), 6.5kW ■ Dec.19 22:54 ~ Dec.20 6:00: tot 7:06 (including 2:00 downtime), 11kW ■ Dec.21 22:00 ~ Dec.22 12:06: tot 14:06 (including 0:22 downtime), 11kW  Total 30:54 (including 4:10 downtime)			
<b>Comments/Requests</b>			

# Results of RUN#45

## Target Empty Run and Liquid $^3\text{He}$ Run

- # of E15 main triggers (K+CDS[1hit]+forwad-n) @ 10kW normalized

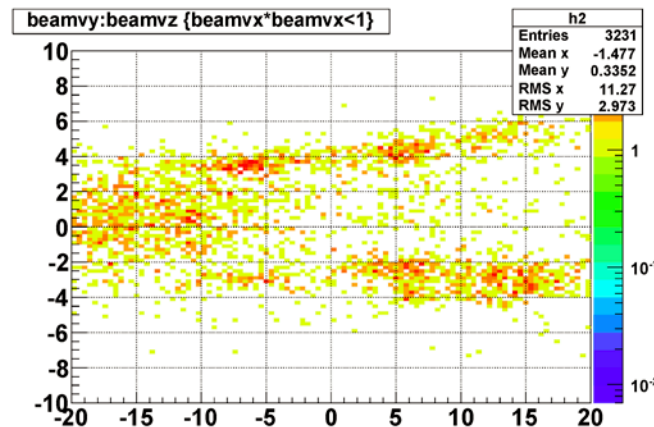
$^3\text{He}$ empty	$^3\text{He}$ filling
~70 events / spill	~85 events / spill

- vertex images reconstructed by the CDS  
(cross-section of the target cell)

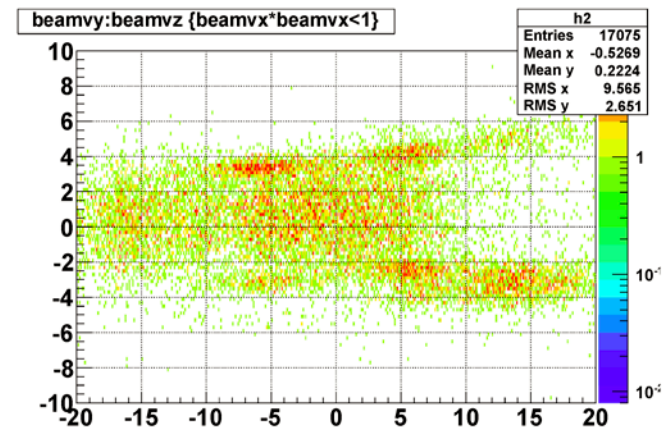
target cell



$^3\text{He}$  empty

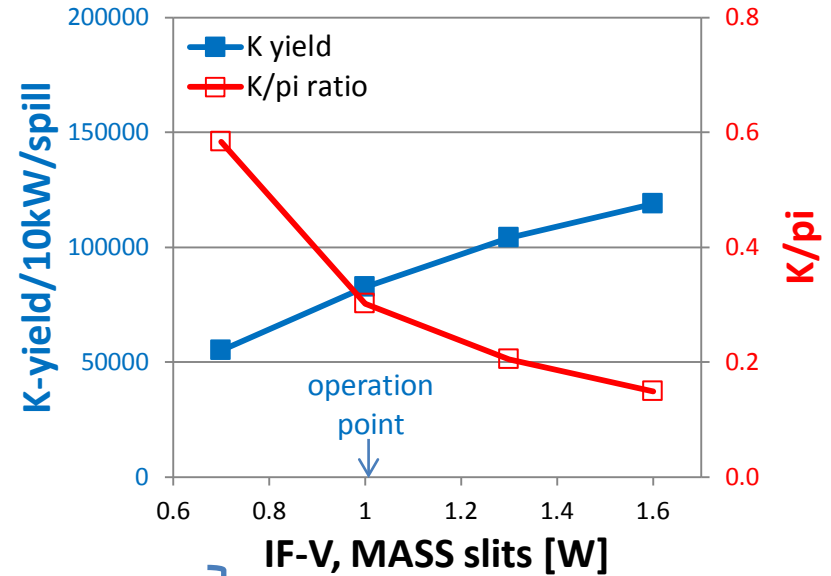
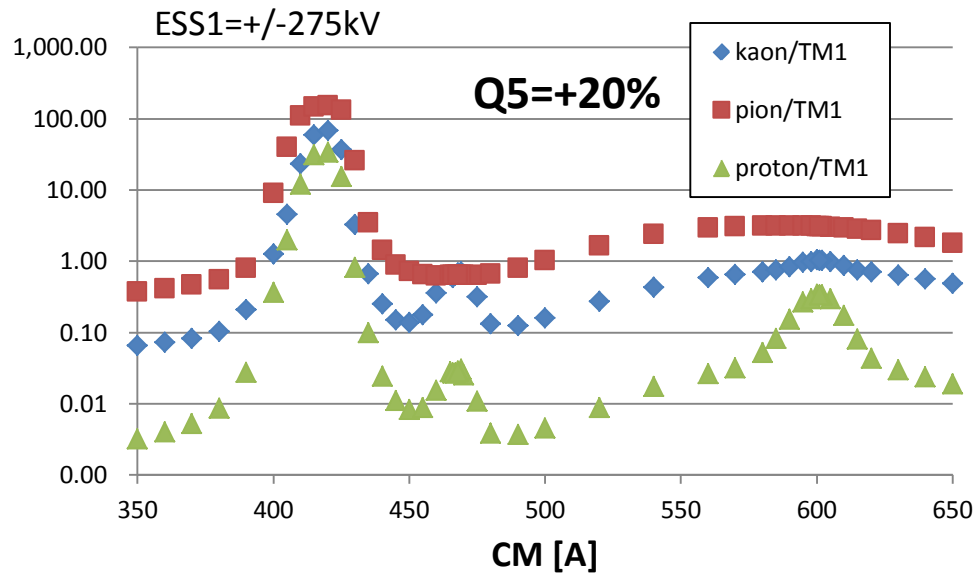


$^3\text{He}$  filling



# Results of RUN#45 (Cont'd)

## Beam-Line Re-Commissioning



- The  $K/\pi$  ratio has been getting worse ( $0.5 \rightarrow 0.3 @ 1W$ )
  - K-yield has increased ( $50k \rightarrow 80k/spill/10kW @ 1W$ )
- compared with Run#40/43  
 Au/Ni=1.8 is assumed

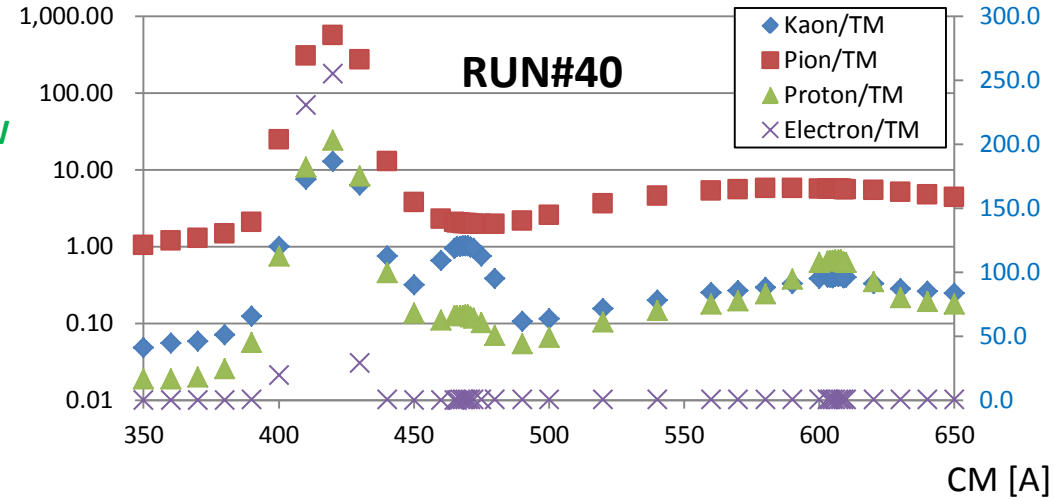
[ /spill ]	10kW(Au)	20kW(Au)	50kW(Au)	270kW(Ni)
beam intensity	350k	700k	1.8M	5.3M
K <sup>-</sup> yield	80k	160k	400k	1.2M
K & CDS[1hit] trig. rate	3k	6k	15k	45k
<b>K &amp; CDS[1hit] &amp; n trig. Rate</b>	<b>0.1k</b>	<b>0.2k</b>	<b>0.5k</b>	<b>1.5k</b>

# Appendix

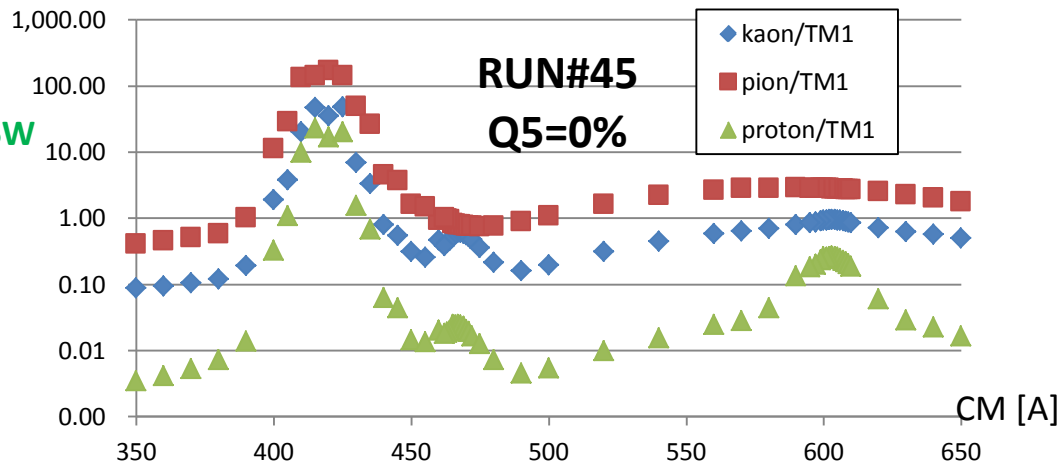
- CM scan results in RUN#40 and RUN#45

- the tail of  $\pi$  distribution was reduced by increasing the value of Q5

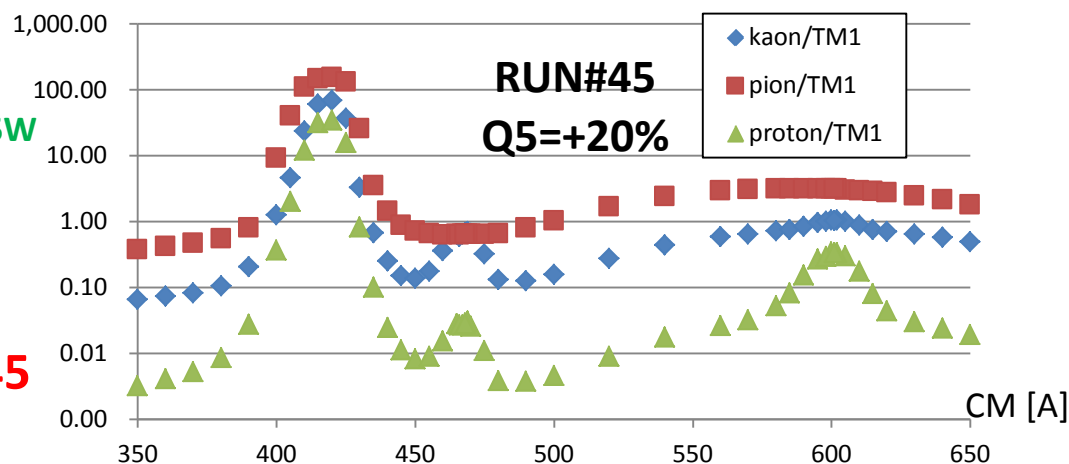
MR=1kW  
ESS1=275kV  
IFV,MASS=1W



MR=11kW  
ESS1=275kV  
IFV,MASS=0.5W



MR=11kW  
ESS1=275kV  
IFV,MASS=0.5W



slit widths were NOT the same  
between the RUN#40 and the RUN#45  
(RUN#45 < RUN#40)