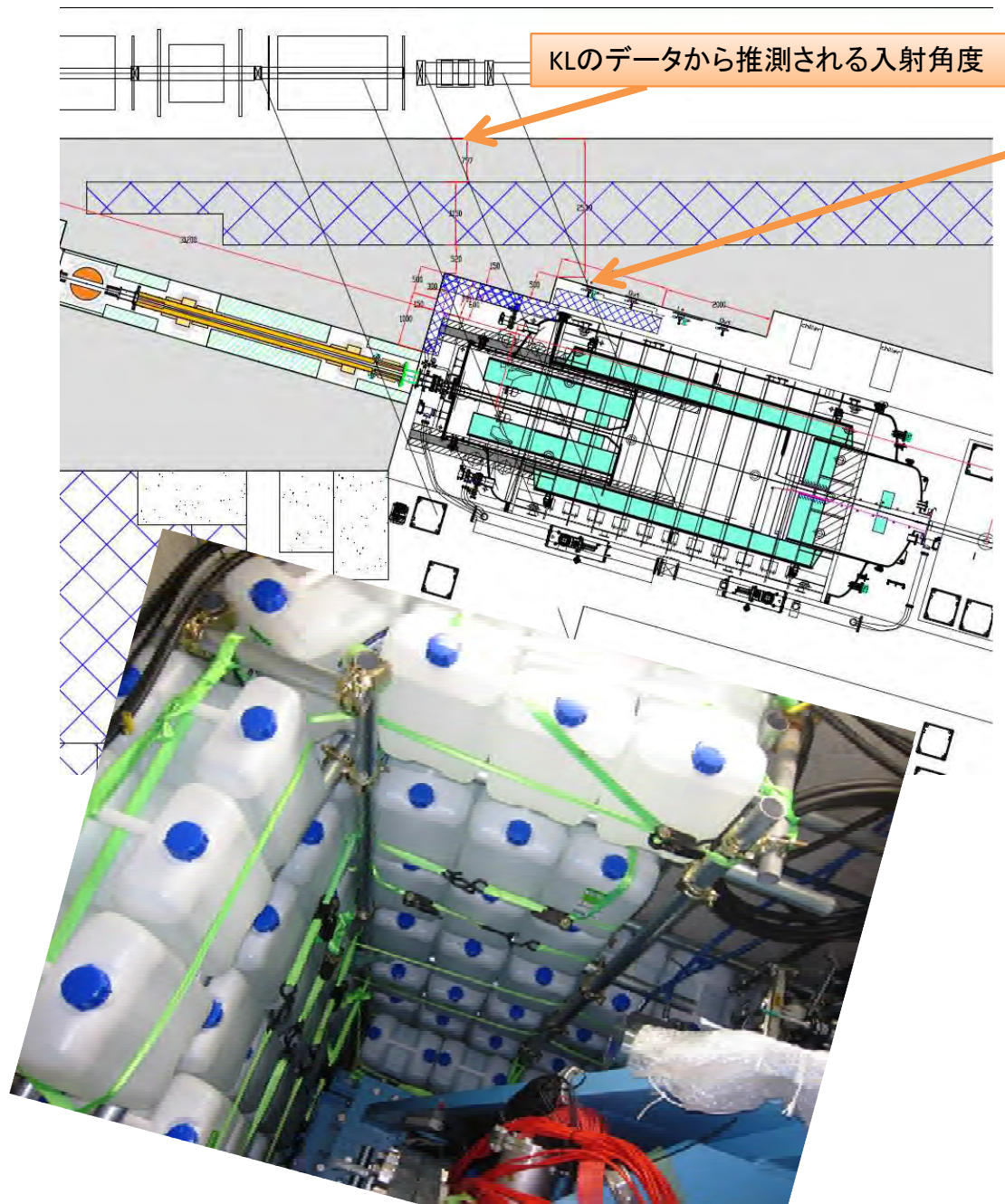


**J-PARC Hadron Hall : EXPERIMENTAL REPORT on RUN# 47b**

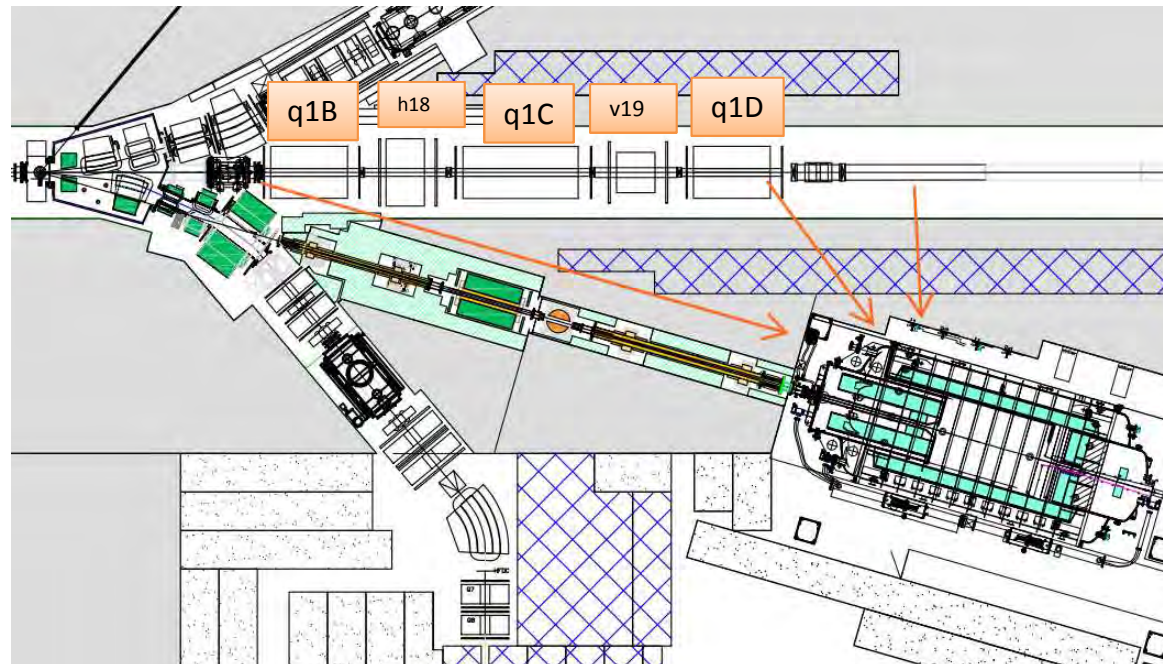
		<b>Date (submitted)</b>	14 March 2013
<b>Group</b>	KOTO	<b>Beam line</b>	KL
<b>Reporter</b>	<b>Name</b>	<b>e-mail address</b>	
	Tadashi Nomura (KEK)	<a href="mailto:tadashi.nomura@kek.jp">tadashi.nomura@kek.jp</a>	
<b>Experimenters</b>	Komatsubara, Lim, Nomura, Watanabe (KEK), Tajima (Yamagata), Yamanaka, Togawa, Shiomi, Sugiyama, Takashima (Osaka), Nanjo, Kawasaki, Naito, Maeda, Seki, Hineno (Kyoto), McFarland (Arizona State) Campbell, Teccio, Xu, Whallon (Michigan), Wah, Ma (Chicago), Ko (Cheju), Lee (Chonbuk)		
<b>Summary and Results</b>			
<ul style="list-style-type: none"> <li>- Study on activities (neutrons) from the HD primary beam line <ul style="list-style-type: none"> <li>- Optics of the primary beam line in downstream of the T1 target was tuned, and relation with accidental activities in KL area was evaluated. (See attached.)</li> </ul> </li> <li>- Commissioning of new detectors located at downstream of the vacuum tank <ul style="list-style-type: none"> <li>- Collar counter (CC06) and in-beam charged and photon detectors (BHCV, BHPV)</li> </ul> </li> <li>- Commissioning of DAQ system <ul style="list-style-type: none"> <li>- Data compression in level 3 processing was implemented and tested.</li> </ul> </li> <li>- Trigger study <ul style="list-style-type: none"> <li>- Timing and width adjustments for online-veto were done.</li> <li>- Center of energy (COE) cut in level-2 trigger was implemented.</li> </ul> </li> <li>- Supplementary data to understand January-run results</li> <li>- Practice physics run <ul style="list-style-type: none"> <li>- Data taking with a loose trigger condition in order to establish trigger condition in physics run</li> </ul> </li> <li>- Halo neutron measurement with “neutron collar counter” (NCC)</li> </ul>			
<b>SCHEDULED and EXECUTED MACHINE TIME, BEAM CONDITION, DOWN TIME, Priority etc.</b>			
[Scheduled machine time]			
From the night of 3/7 to the morning of 3/26 (6 half-day and 12 full-day)			
[Executed time]			
*HD beam-line study for KL: 3/8 21:20 - 3/9 00:05			
*15kW user time (80 hours)			
3/7 23:50 - 3/8 09:45, 3/9 00:05 - 3/9 09:45 (transverse RF freq. 95MHz)			
3/9 22:11 - 3/10 09:55, 3/10 21:41- 3/11 09:45, 3/11 21:31 - 3/13 9:00 (tr-RF freq. 47MHz)			
3/14 0:00 - 3/14 00:53			
[Down time] (>20 minutes)			
3/11 06:27 in order to recover SX efficiency (99.1%) (2.5 hours, continued to ACC study)			
→ This trouble caused the delay of 20kW beam start from the night of 10 to the night of 13.			
3/14 00:53 Beam stopped due to SX SMS1 trouble again			
→ Serious trouble in SMS1 was found; SX operation in RUN47 was terminated.			
[Access inside the KL sub-door]			
None			
<b>Comments/Requests</b>			

# KLエリアにおけるbackgroundについて 2013/03/12



## Beam study 2013/03/08 21:25～24:00

- ビームであたりをつける。基準は最もレートの高いbarrel-module: 374k counts/spill.
  - T1にビームを当てない状態: \*KL-background-rate 374k→30k (92%減)
    - Primaryのビームコアがどこかで起こしたロスが主な原因ではない。
  - T1-On状態に戻して、q1B-C-Dで下流ビームサイズを変えた場合:
    - 6kW運転時の設定(Dumpでビームを絞る設定): KL-rate 374k→201k (46%減)
    - q1Bを電源最大(580A)までcurrentを上げる: 374→147k (60%減) ←今回Best
    - ただし、Dumpでビームが細く連続ビーム運転ができないため、q1B最大値を維持しつつ、q1C-q1Dによりdumpでdefocusする設定にした: 374k→158k(57%減)
    - K1.8D1/K1.1D1-On, H18で補正すると、若干ロスが増えた 374→219k (41%減) ←運転状態。



結果:

水遮蔽 x0.38

ビーム調整 x0.60

あわせて元の1/4程度までKLにおける  
Background rateが低減した。

今後:

1. 遮蔽増強

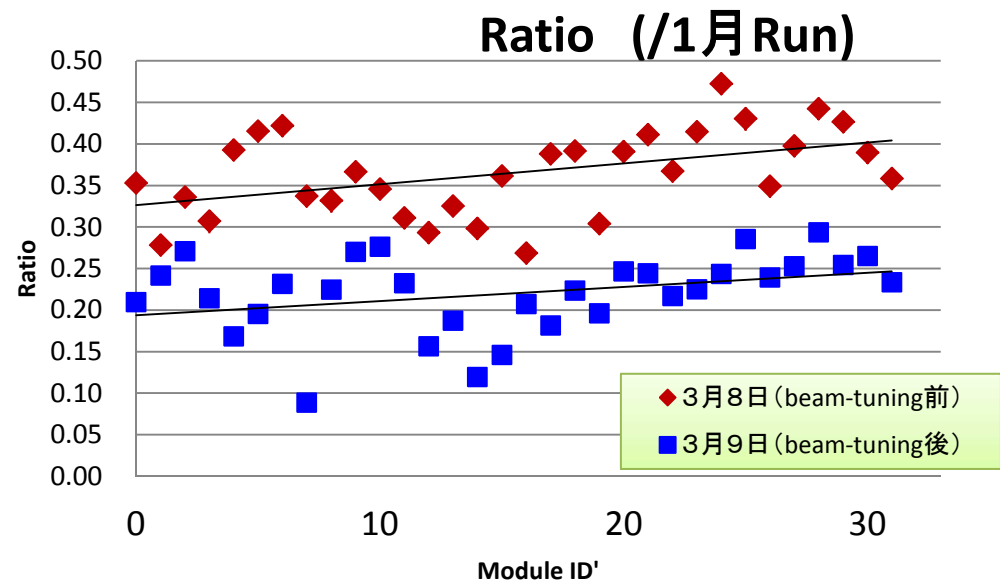
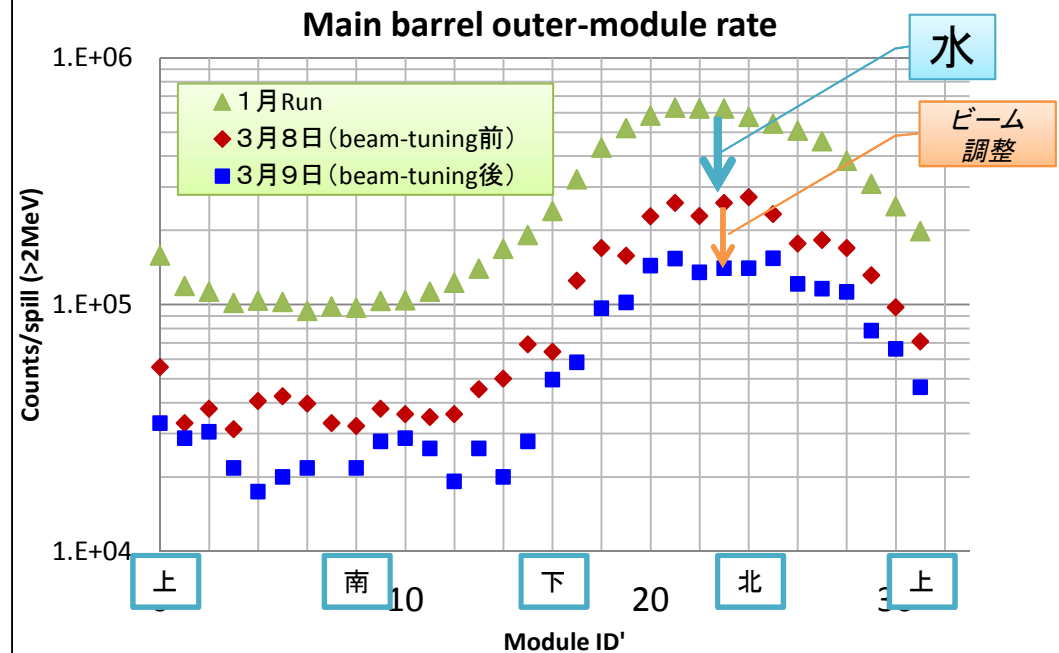
\* 水タンク追加。

\* ボロン入ゴムシート等を追加。

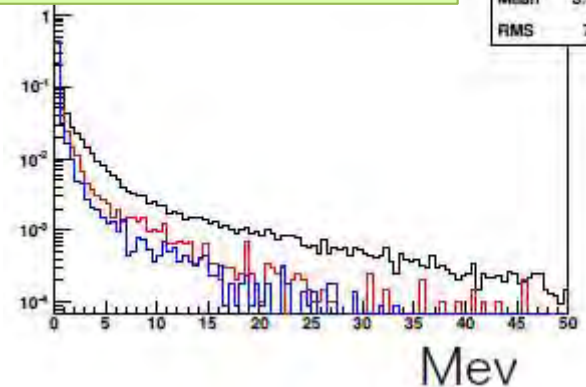
2. 光学計算

\* q1Dの位置でビームサイズを  
絞りつつ、ダンプでdefocusされる  
設定を探す。

3. q1Bの電源増強?



BarrelでのEnergy deposition分布



# 断面図

