

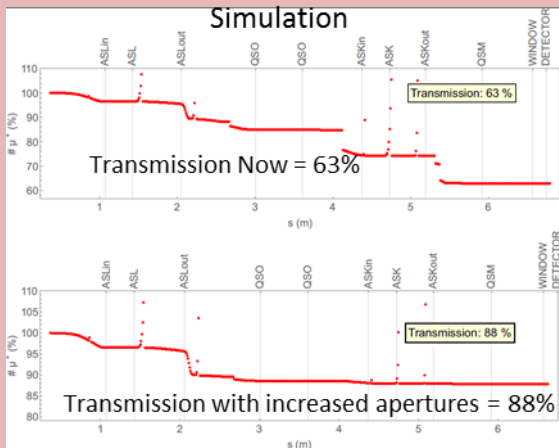
# Beam Line Status 2017

## 2016 Implementations:

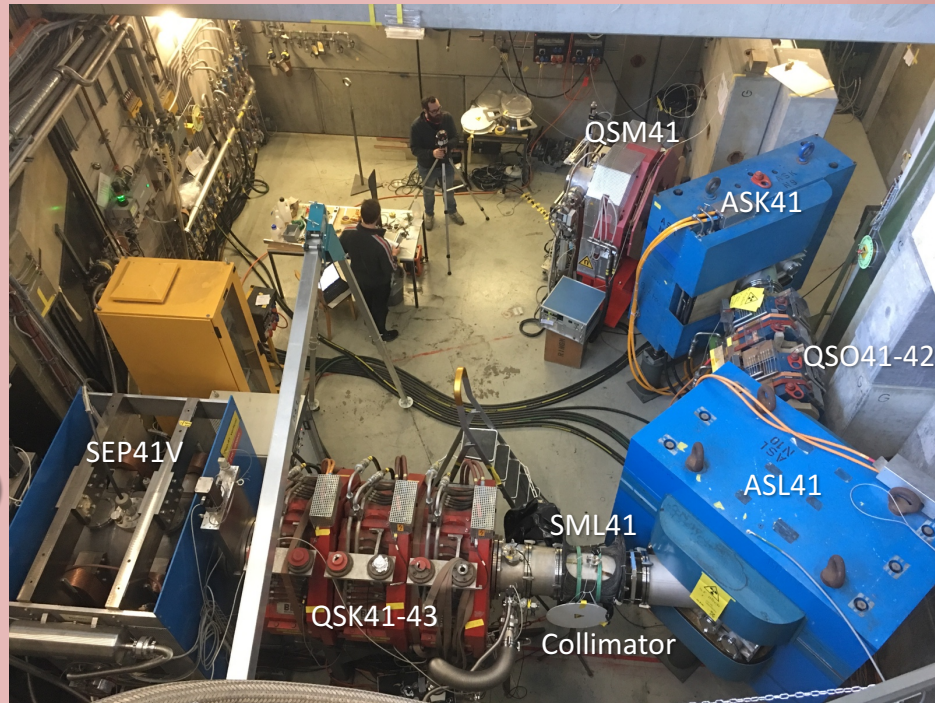
- ASK41 final bending angle 60° -> 65° bending angle
- Construction wider-gap vacuum chambers 18cm -> 33 cm gap for ASK41 & ASL41
- New ASL41 magnet "closed yoke"
- Introduced New Luminophor Beam Monitoring System in vacuum

## 2016 Beam Time (4 weeks Nov./Dec.)

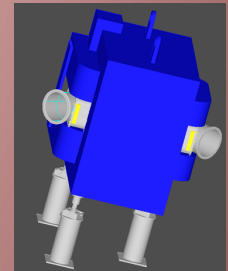
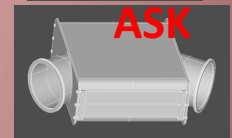
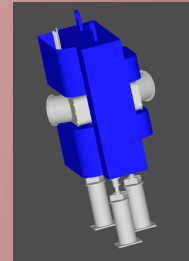
Goal to test predicted transmission efficiency improvement with new vacuum chambers



Beam time complicated due to SINQ & beam-dump problems -> TgE optics changed during run -> started with 16% loss to earlier in year!  
 Could not complete all investigations!



## New Elements

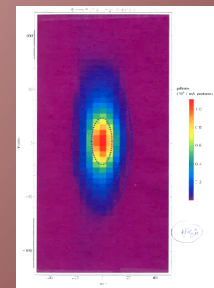


## Provisional Numbers – Analysis underway

- Measured a 30% Muon Yield increase
- Investigating poorer separation quality from Wien filter
- Successful implementation of Luminophor beam monitor in vacuum
- Many further measurements being analysed (range-curve & DRS background data etc.)

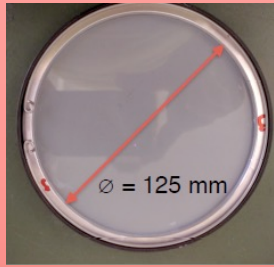
$$R_{\mu} = 8.4 \cdot 10^7 \mu^+ / s \text{ at } 2.2 \text{ mA proton Current}$$

$$\sigma_x \sim 7.5 \text{ mm}, \sigma_y \sim 21.7 \text{ mm}$$



Further investigations necessary – hence request 4 week beam time PiE5  
 At period start as CMBL setup

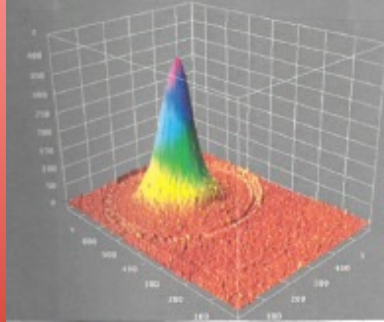
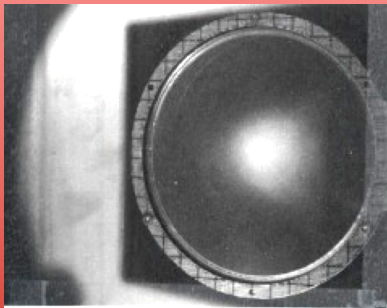
# Luminophor/CCD Detector



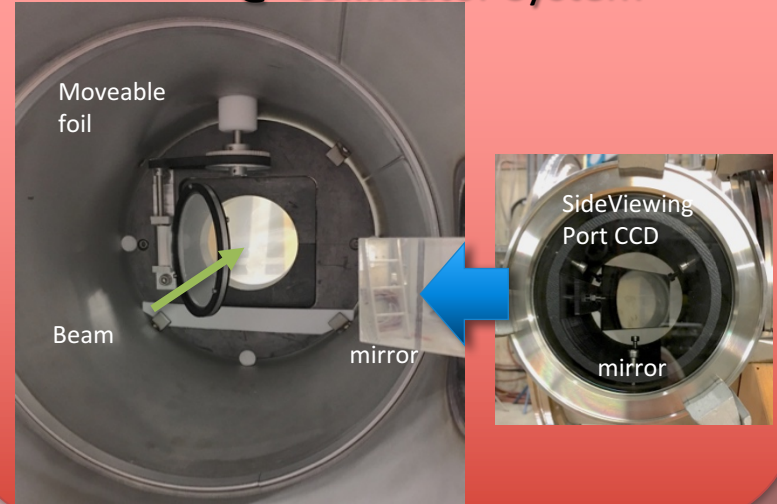
Foil 3 $\mu$ m MYLAR + 5 $\mu$ m CsI(Tl)  
 CCD camera Hamamatsu Orca 4.0/IDS  
 54k ph/MeV,  $\lambda_{MAX}$  550nm = CCD  
 Surface Muon 1200phs



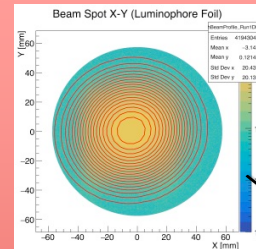
## Raw Muon Beam Spot



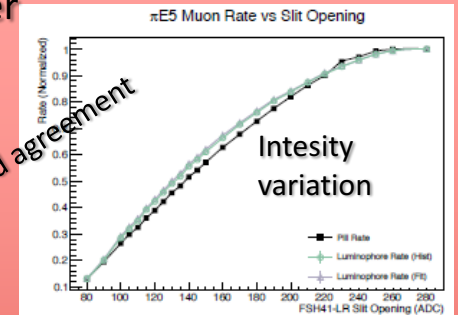
# Vacuum Beam Line Installation @ Collimator System



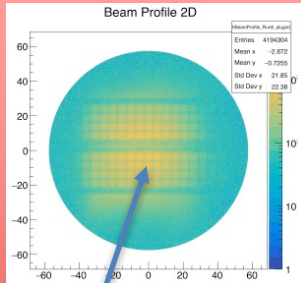
# Intensity Slit Curve & Profile comparison with 2-D Pill scanner



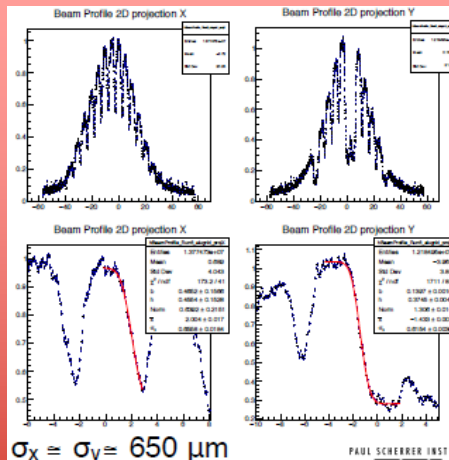
Very Good agreement



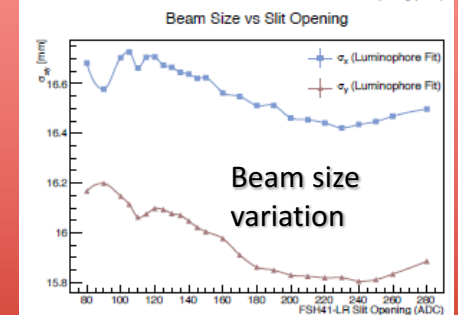
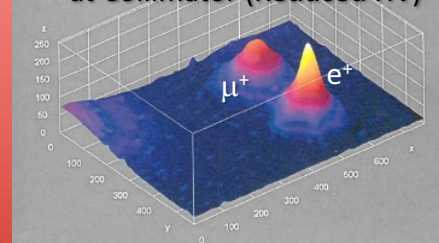
# Muon Radiograph with sub-mm resolution



750  $\mu$ m Al grid

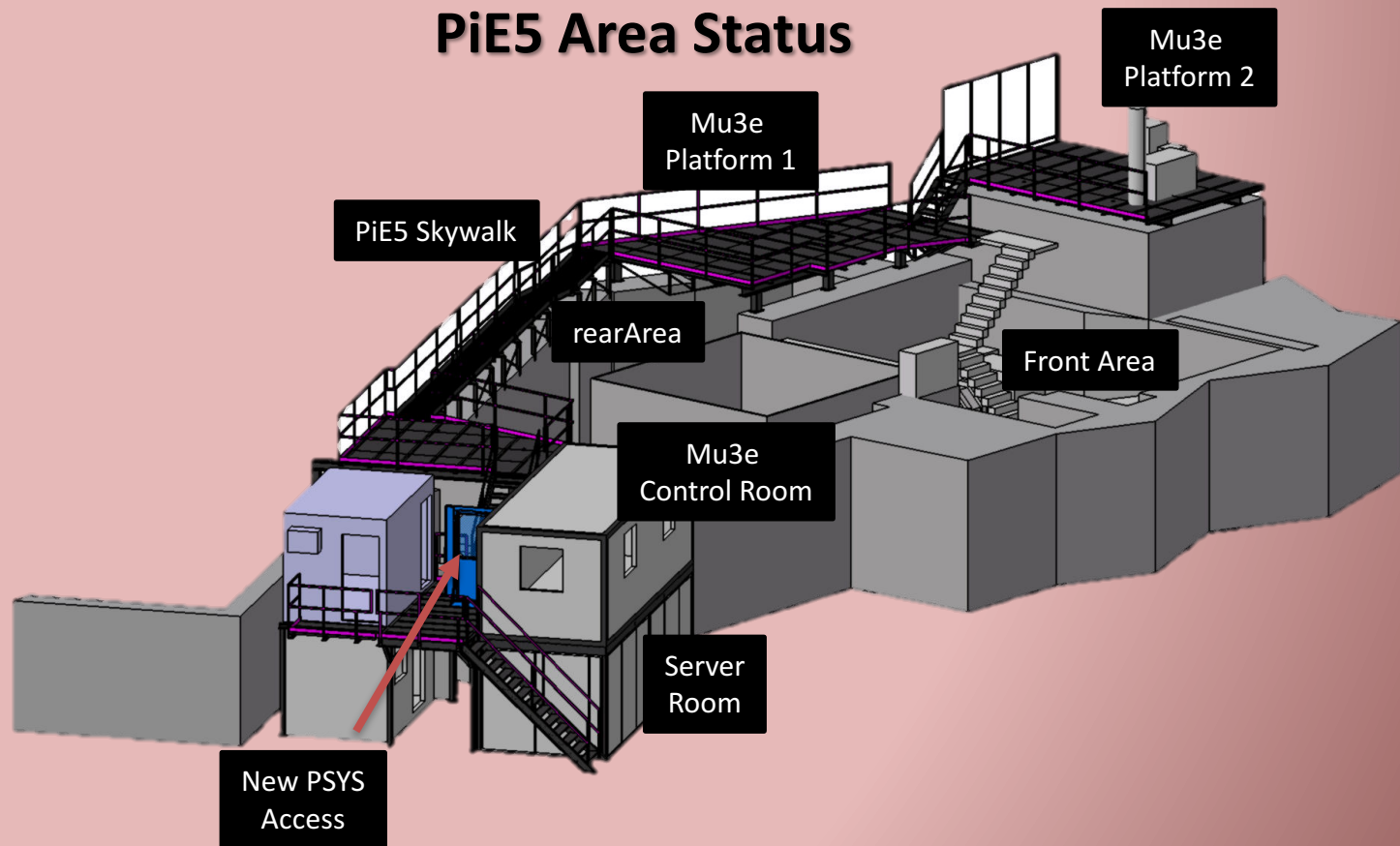


# Online Separation measured at Collimator (Reduced HV)





# PiE5 Area Status



- PiE5 Area will have a completely new PSYS access system with an extra access door for Mu3e infrastructure platforms
- PiE5 “Skywalk” will link the new access to the platforms
- Finally the “Skywalk” will also access the area when the magnet is in situ.

Completion of layout end of Shutdown 2016/17 - May 2017