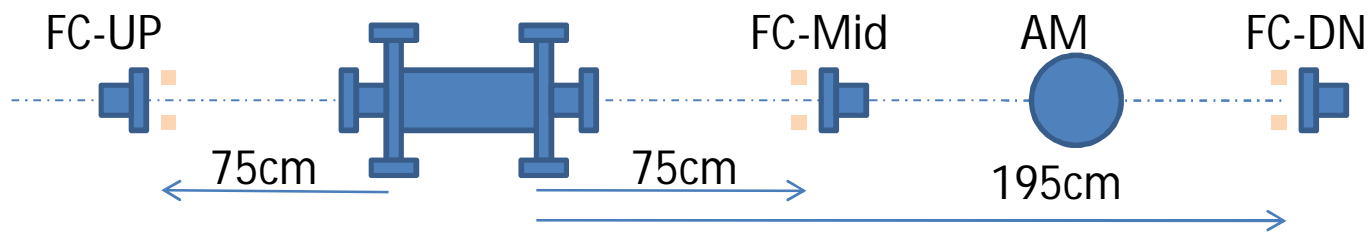
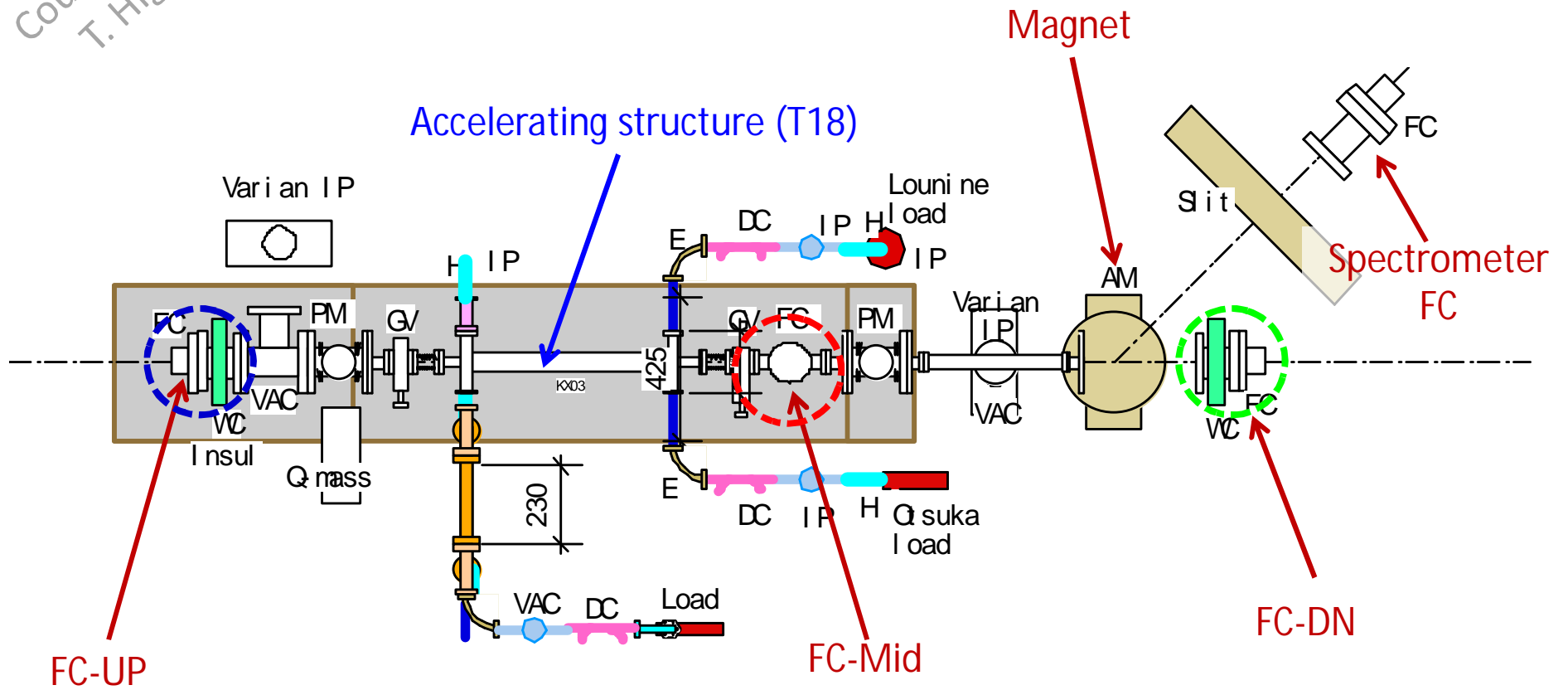


# Dark current measurement at KEK

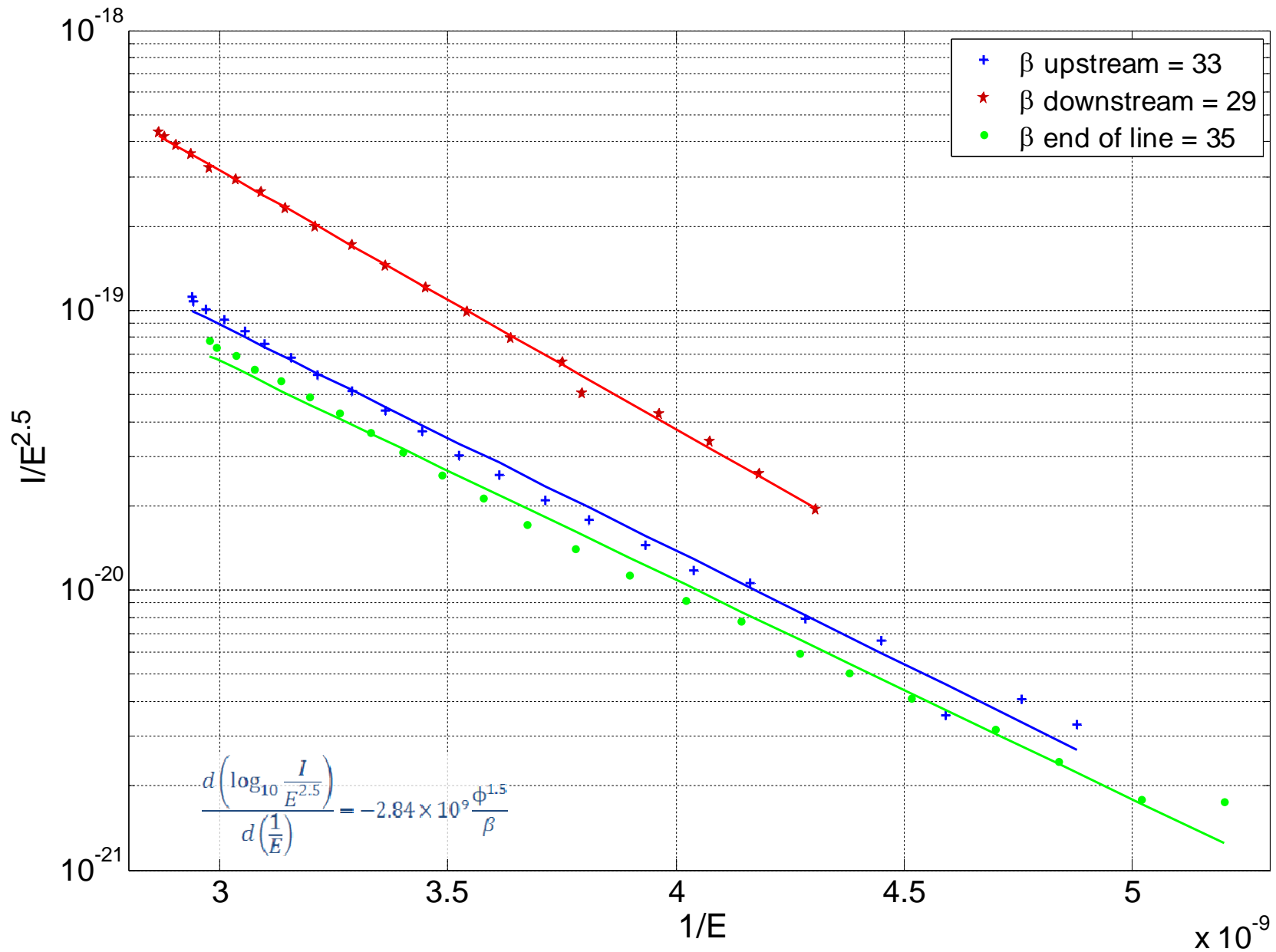
M. Gerboux, S. Döbert, T. Higo, S. Matsumoto, K. Yokoyama

Courtesy of T. Higo

# Experimental setup

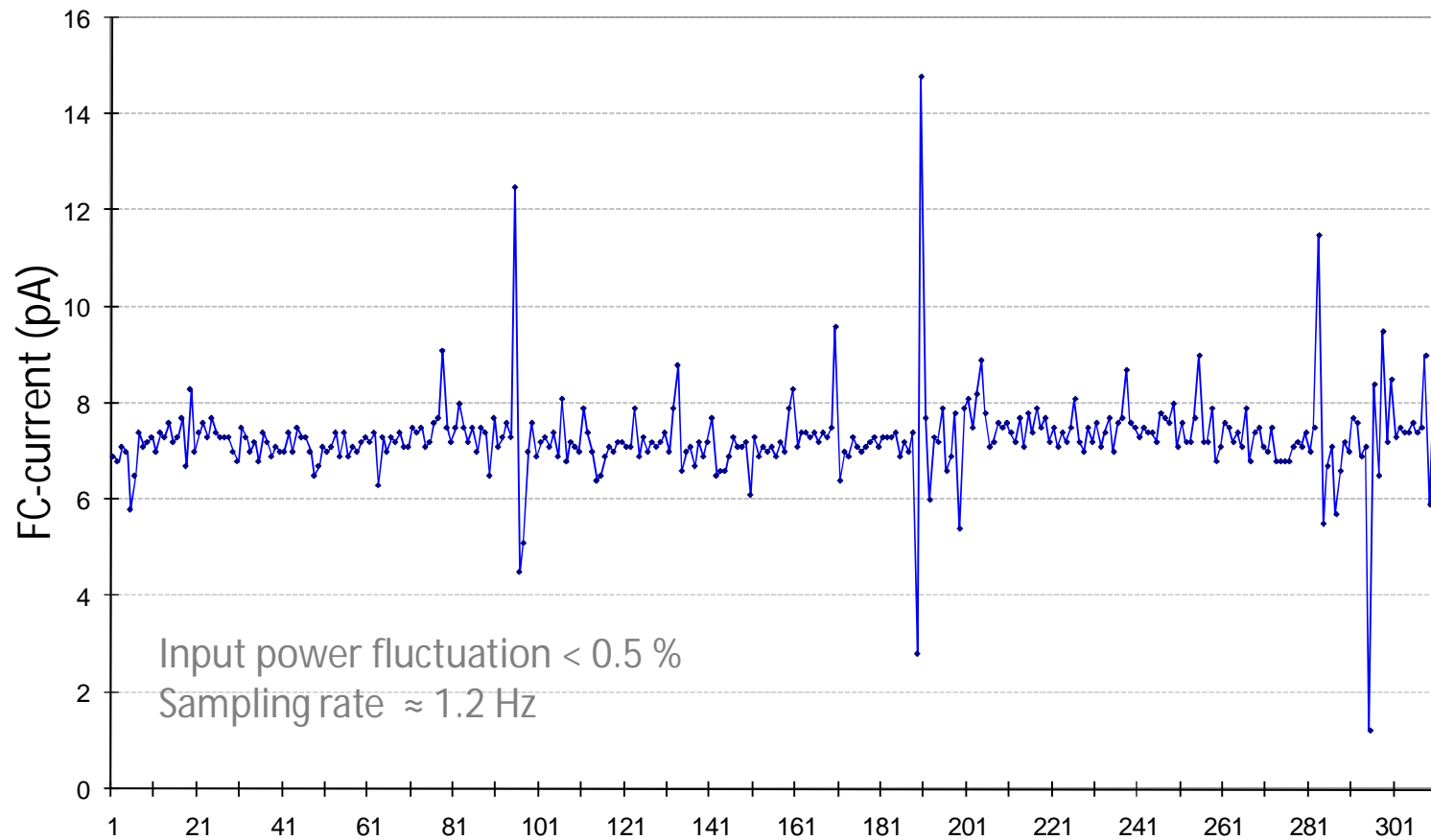


# Field enhancement factor measurement



# pA fluctuations

Data manually recorded during a very stable running period at  $(64.0 \pm 0.3)$  MW

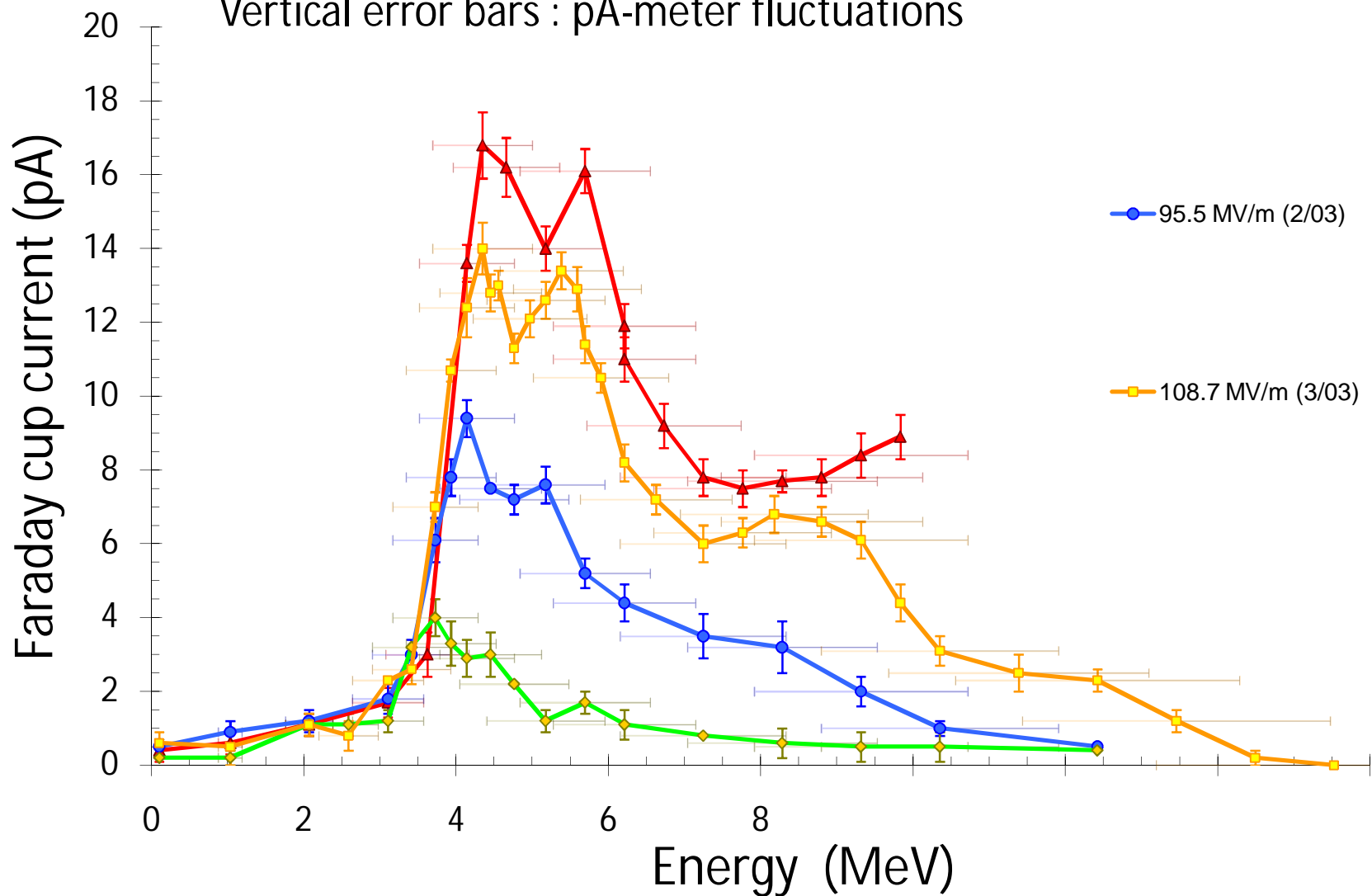


# Dark current spectra measurement

Pulse length : 252 ns

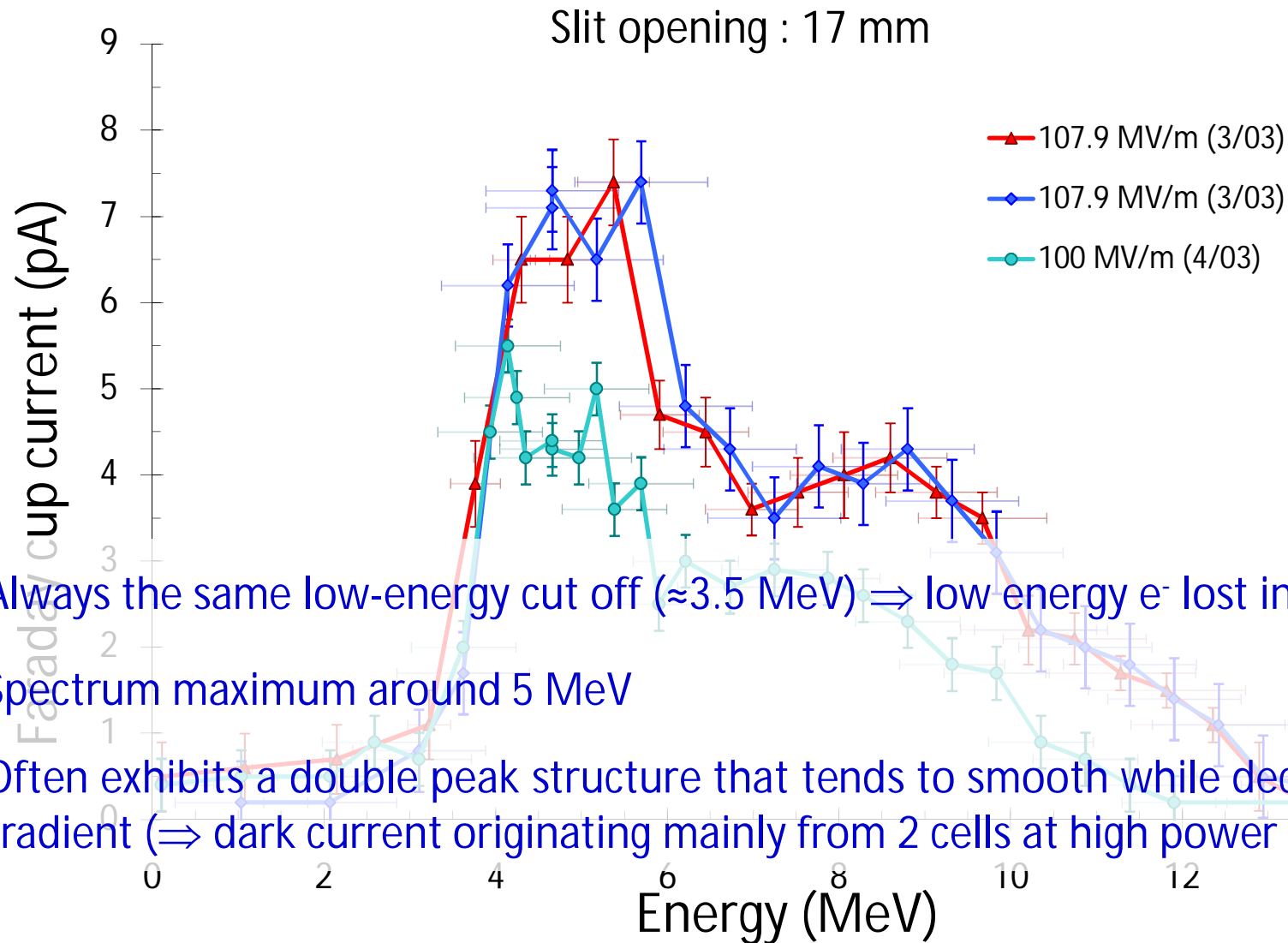
Horizontal error bars : spectrometer resolution ( $\Delta\text{slit}/\rho$ )

Vertical error bars : pA-meter fluctuations



# Dark current spectra measurement

Pulse length : 252 ns



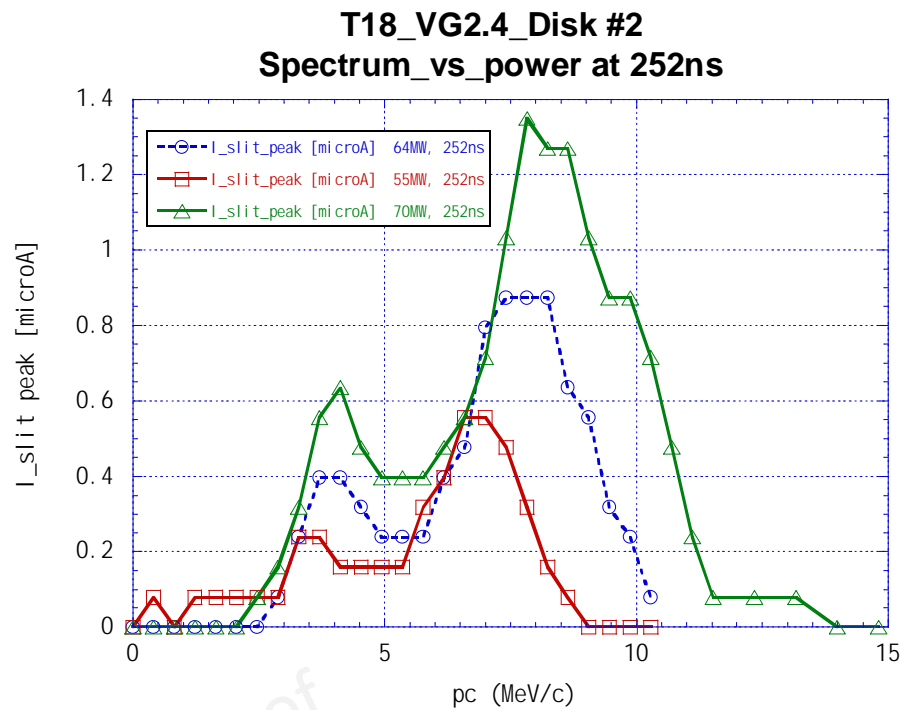
- Always the same low-energy cut off ( $\approx 3.5$  MeV)  $\Rightarrow$  low energy  $e^-$  lost in the pipe ?
- Spectrum maximum around 5 MeV
- Often exhibits a double peak structure that tends to smooth while decreasing the gradient ( $\Rightarrow$  dark current originating mainly from 2 cells at high power ?).

# T18\_VG2.4\_Disk\_#2

## Dark current spectra measured 18 June 2009

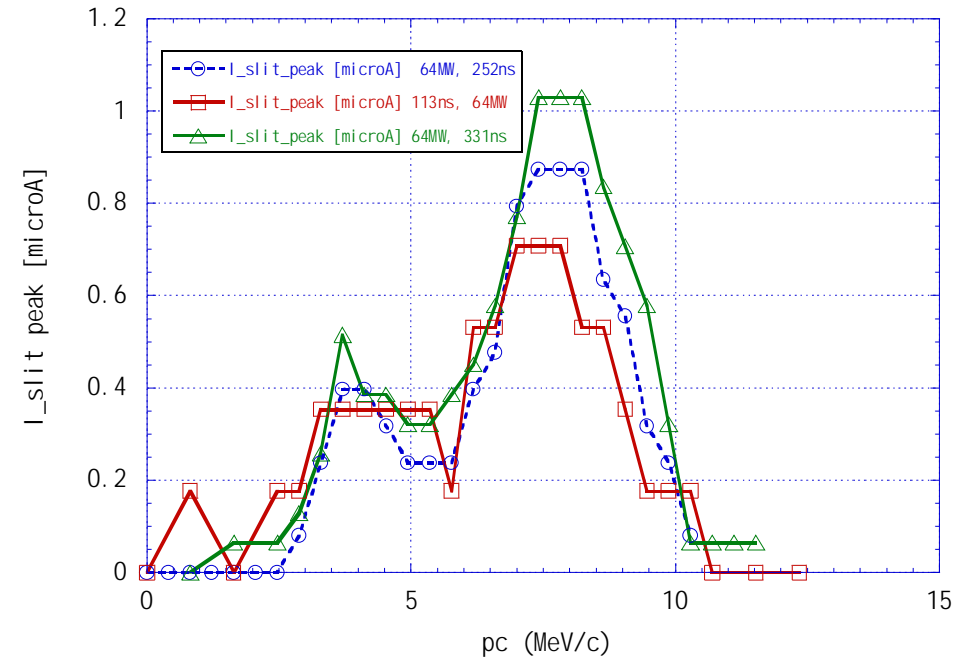
Dependence on power

Dependence on width



090618

T18\_VG2.4\_Disk #2  
Spectrum\_vs\_Width at 64MW



64 MW ↔ 108 MV/m

55 MW ↔ 100 MV/m

70 MW ↔ 113 MV/m

Higo 090703

Courtesy of  
T. Higo

# Conclusion

- Nice test bench, very stable running which makes the measurements easy.
- An automation of the pA-meter read-out would make the measurement even easier and more precise.
- Change in the spectra shape since March to be investigated.
- Possible measurement of the dark current spectrum upstream ?

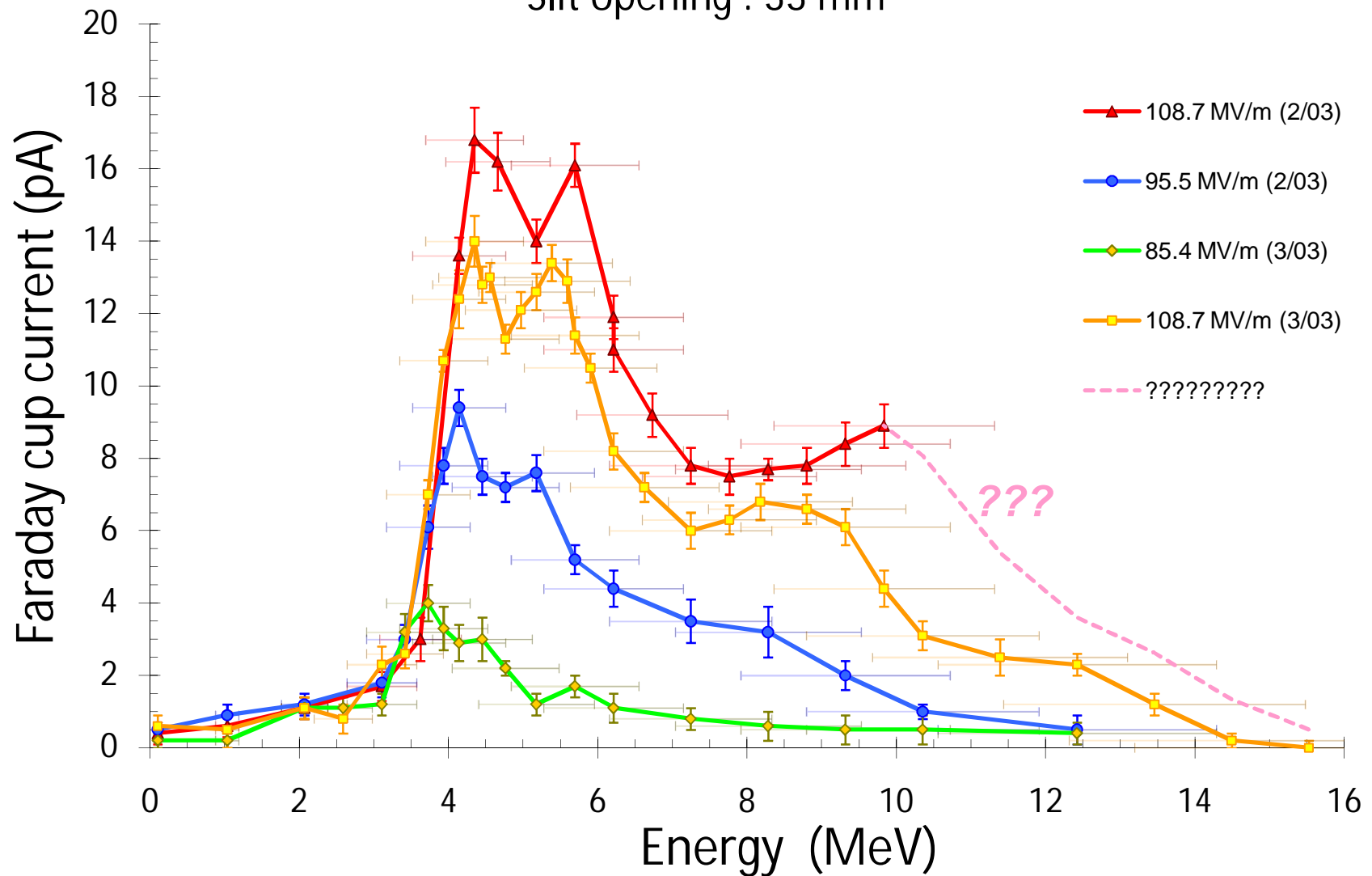


*La réserve du chef*

# Dark current spectra measurement

Pulse length : 252 ns

Slit opening : 33 mm



Courtesy of  
Toshi Higo

# Experimental setup

