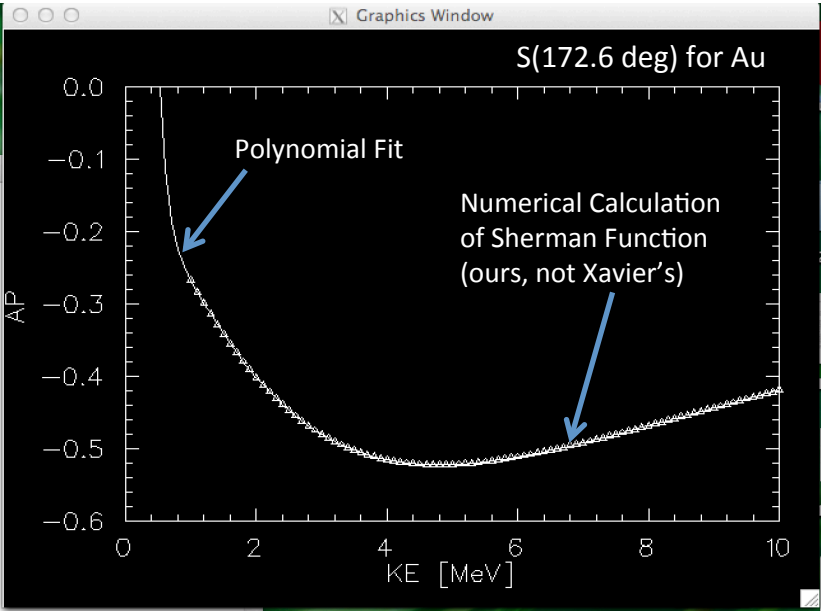


After last meeting Matt, Riad and I discussed January energy choice...

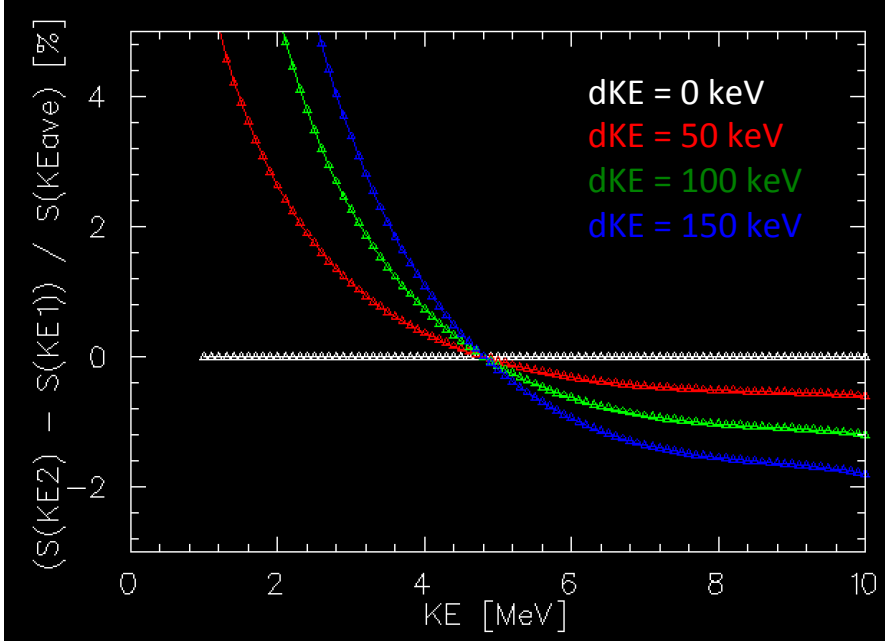
- ✧ Focus on Physics paper measurements
- ✧ Focus on 5 MeV systematics
- ✧ Pick “final” summer energies later
- ✧ Defer 499 MHz until physics measurement done
- ✧ Mott will *never* end

How important is energy spread on the beam ...



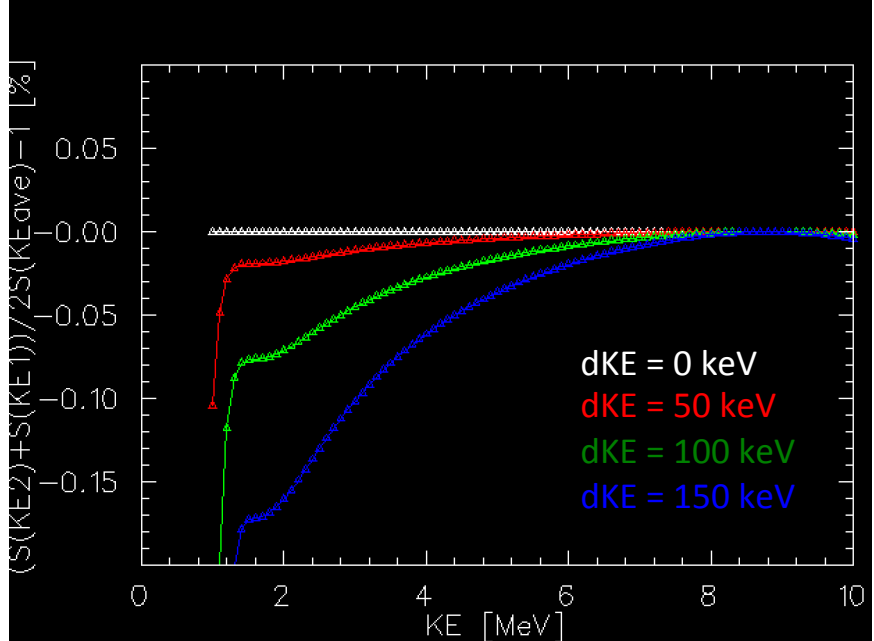
Difference over range

- Variation with energy is large
- Important to collect the full energy spread



Average over range

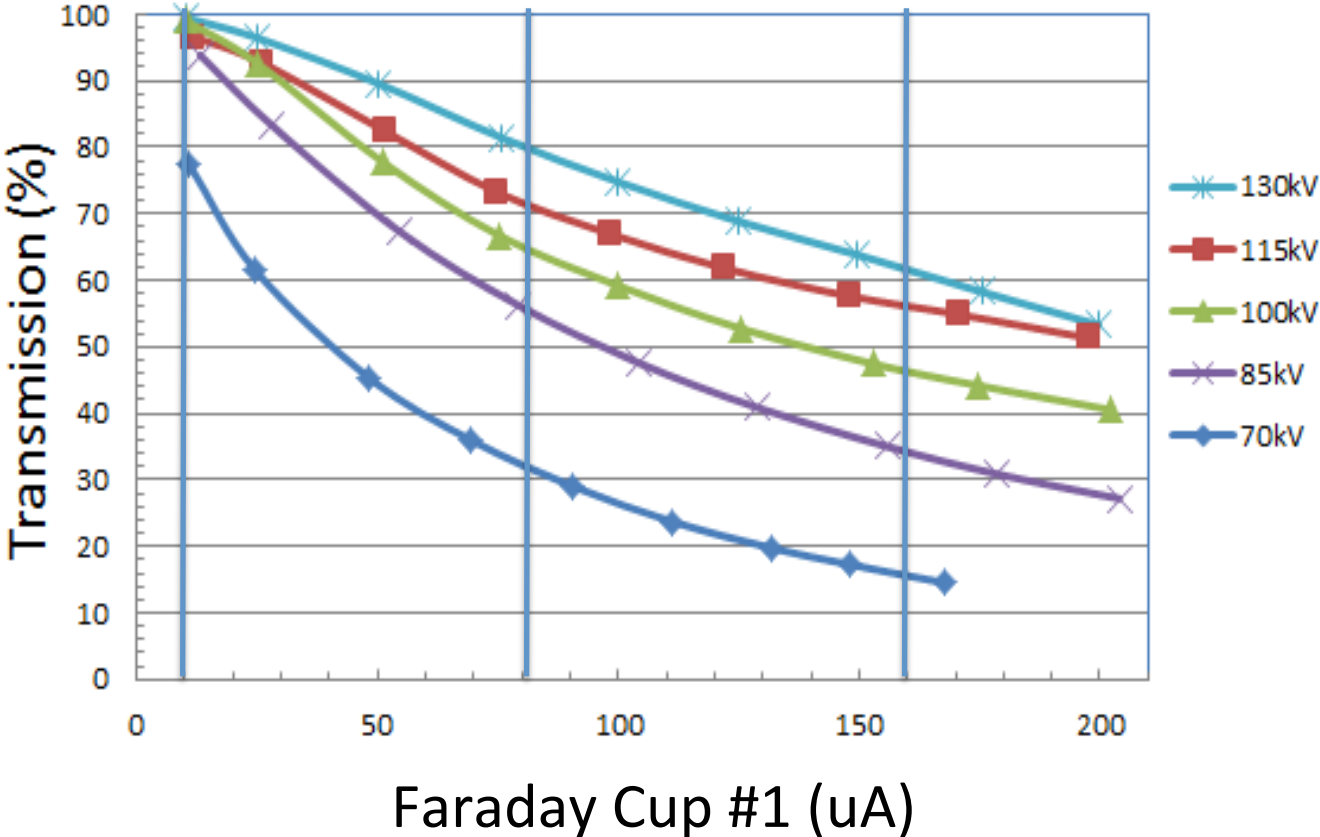
- Fully integrated energy spread largely cancels
- Still non-zero even at 5 MeV



My initial 31MHz beam time estimate using 10uA was unrealistic...

10 uA @ 499MHz ↔ 80uA @ 62 MHz ↔ 160 uA @ 31 MHz

Transmission vs Gun Voltage

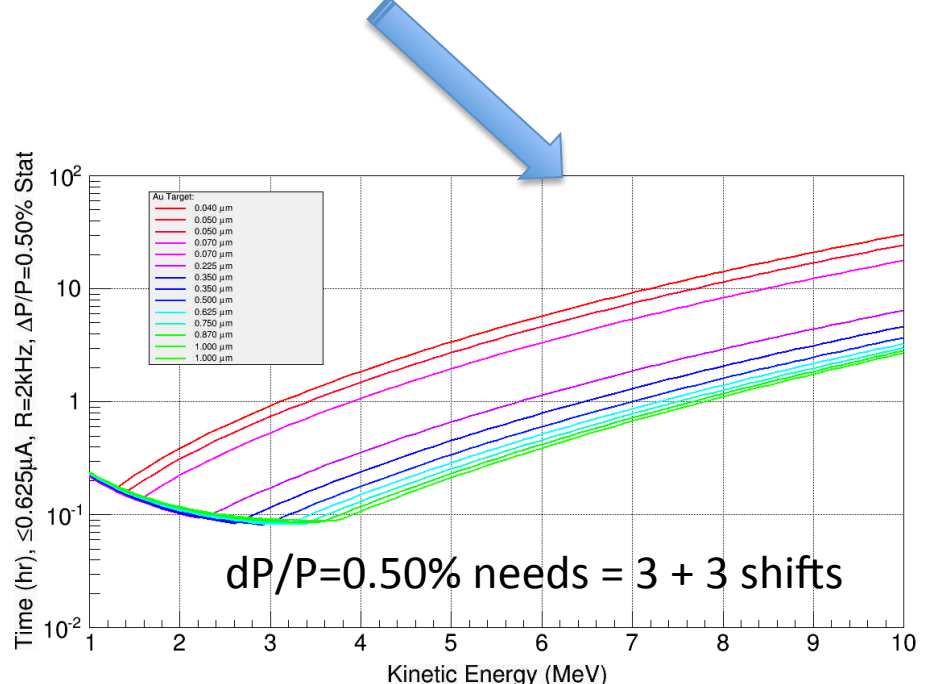
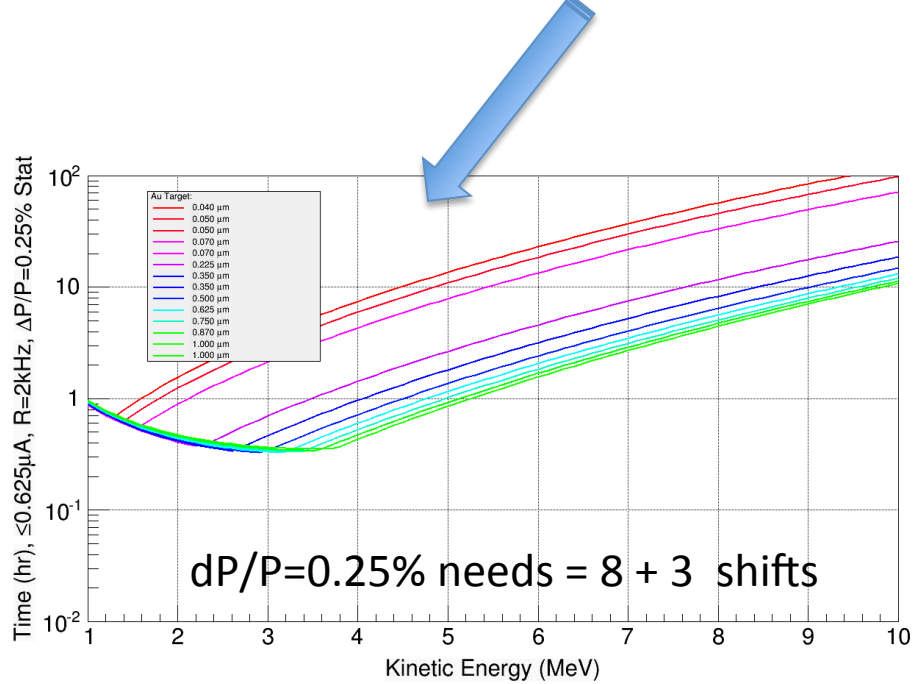


What is our worst case scenario for January ... ?

12 hours of Mott beam tests end of year (starts Sunday @ 8pm)

- Test new Mott mode for higher rate
- Test if 62 MHz (16ns) is sufficiently good
- Characterize transmission vs. bunch charge at 31 and 62 MHz
- Induce and measure energy spread in spectrometer and Mott
- Target foil positions
- Long run stability

Worst Case : I=0.625 uA @ 31 MHz

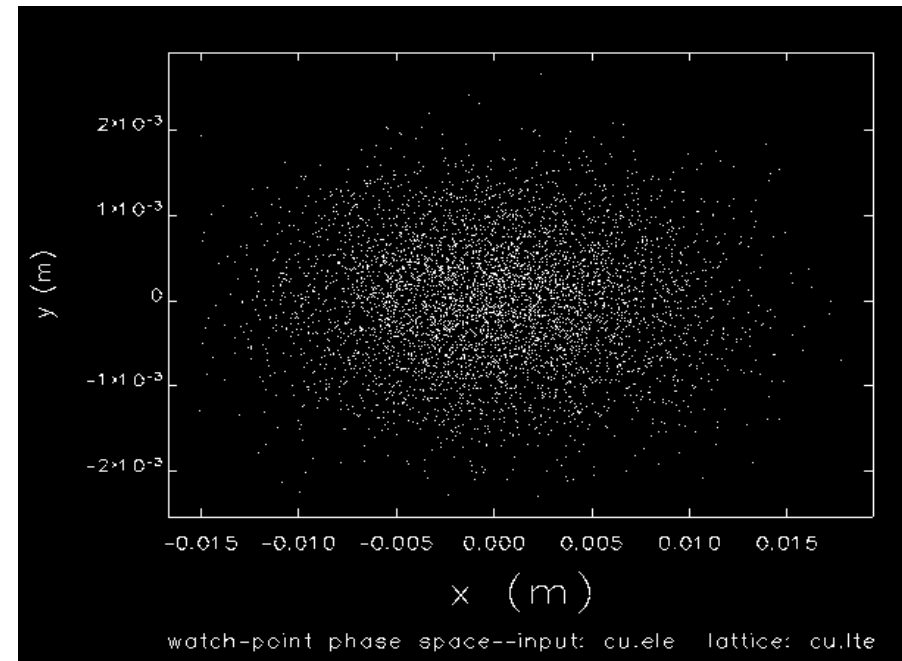
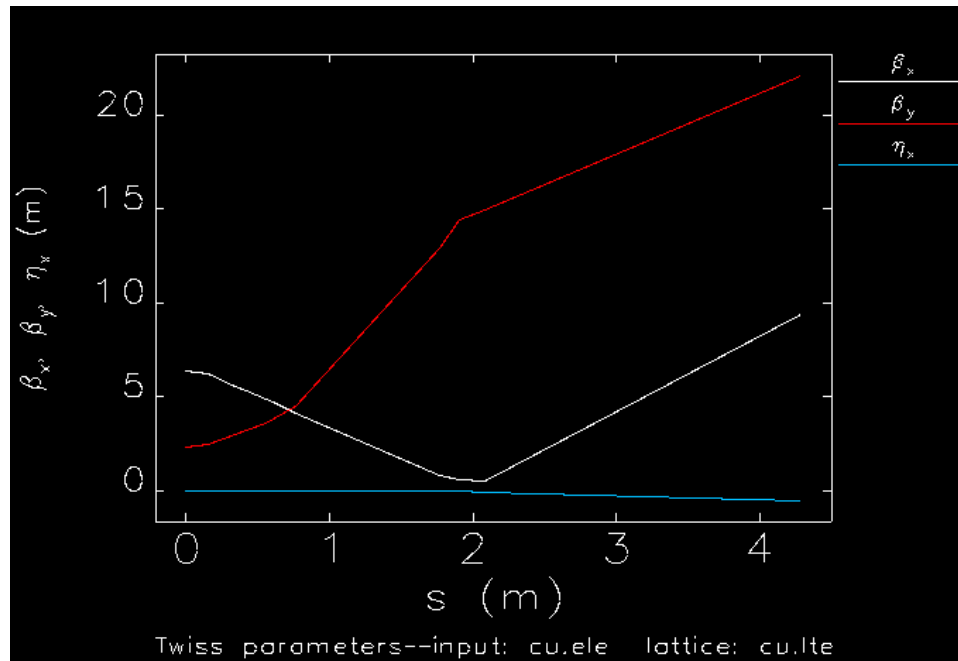


Started building optics deck for Mott and Spectrometer...

Measured (Spring 2014) beam emittance at 5.3 MeV/c

- $\beta_x = 6.38$, $\alpha_x = -1.02$, $\text{emit}_{nx} = 0.39e-6$
- $\beta_y = 2.34$, $\alpha_y = -0.02$, $\text{emit}_{ny} = 0.26e-6$

Two tuning quads (MQJ0L02/MQJ0L02A) at nominal value and dp/p assumed 1%



Finally for experiment we will plan to

- Measure beam emittance
- Measure (and vary) energy spread
- Calculate tuning quads for desired beam spot size and for simulation