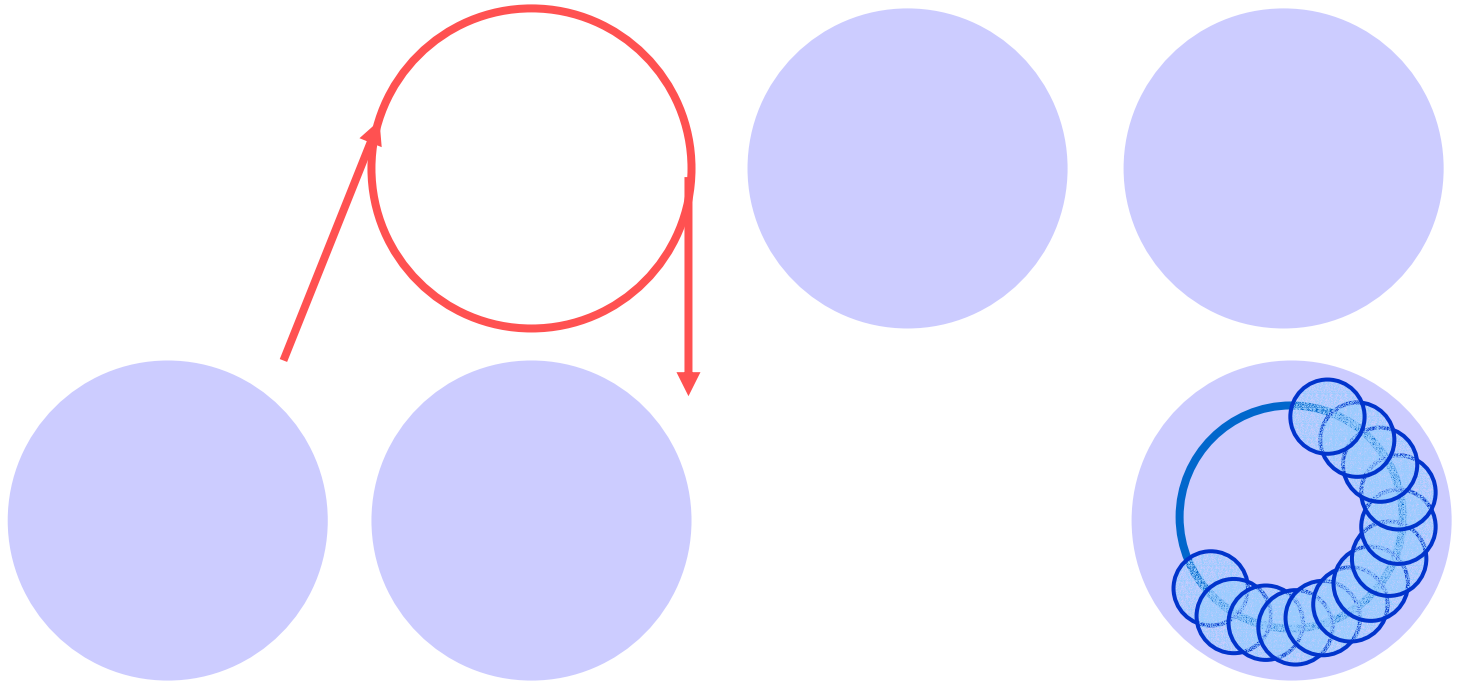


# HITRAP beamlines and Cooler trap



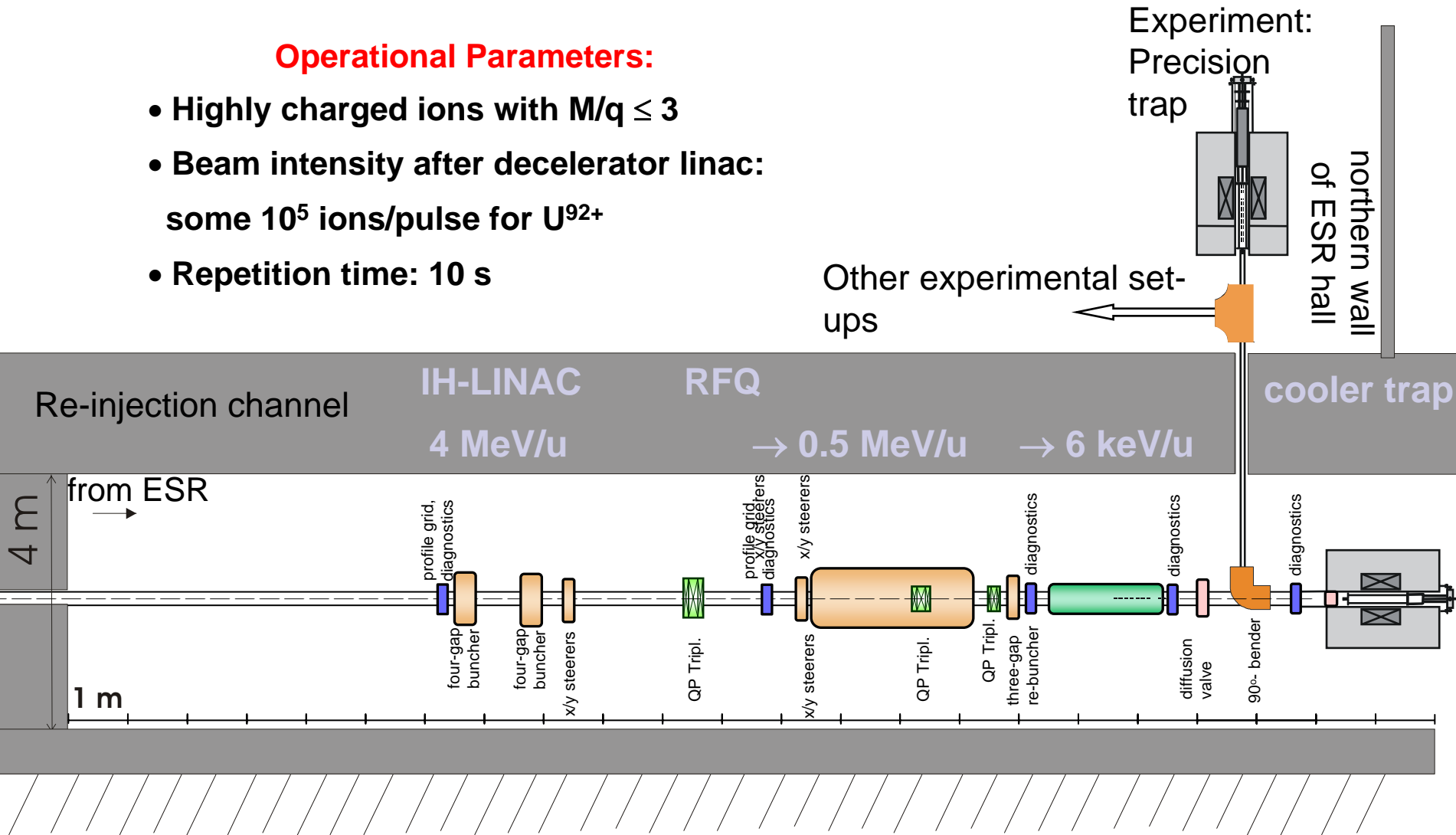
Frank Herfurth

for the HITRAP collaboration

# Overview

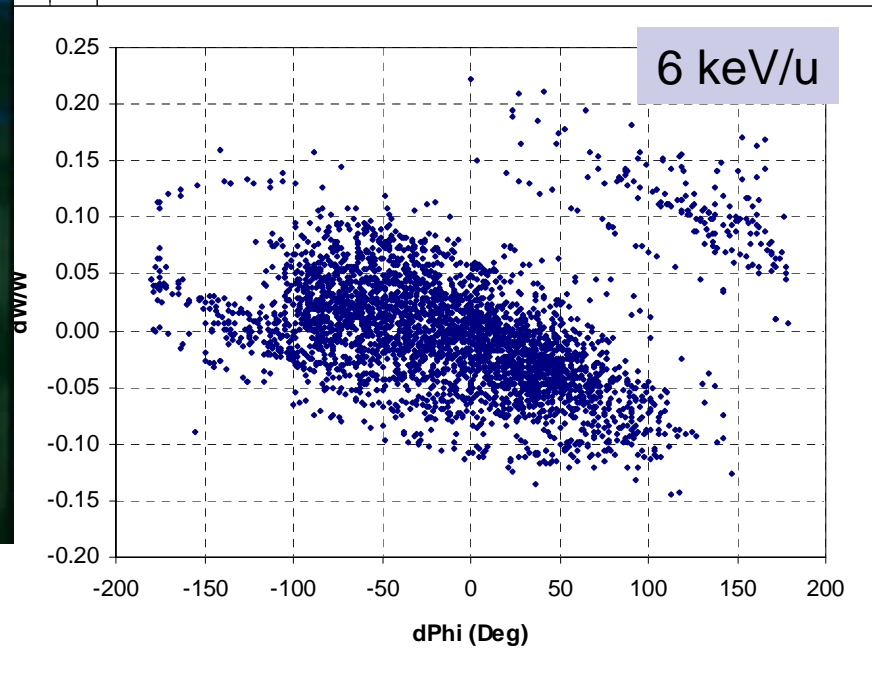
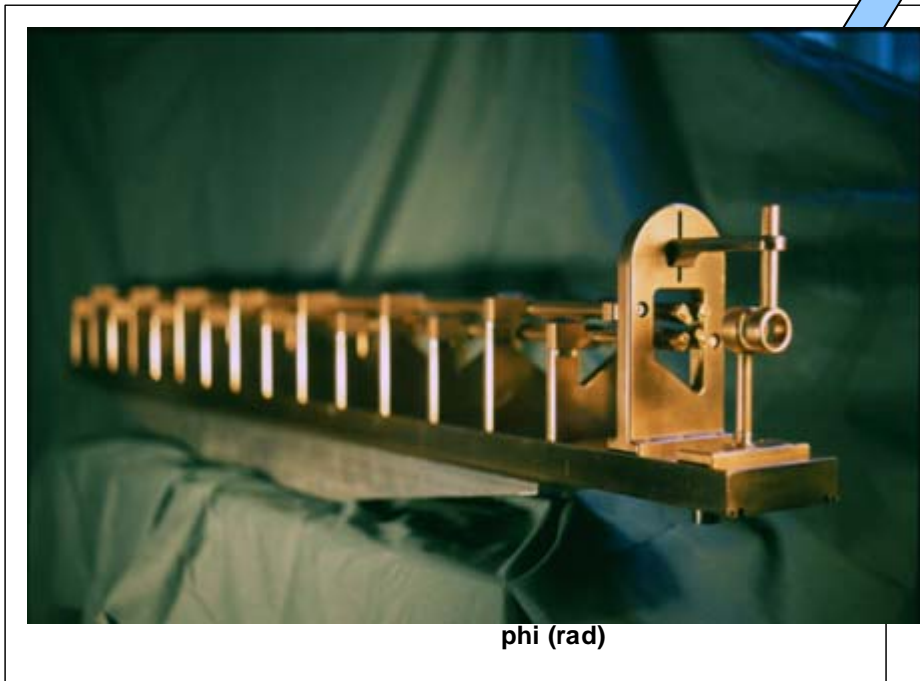
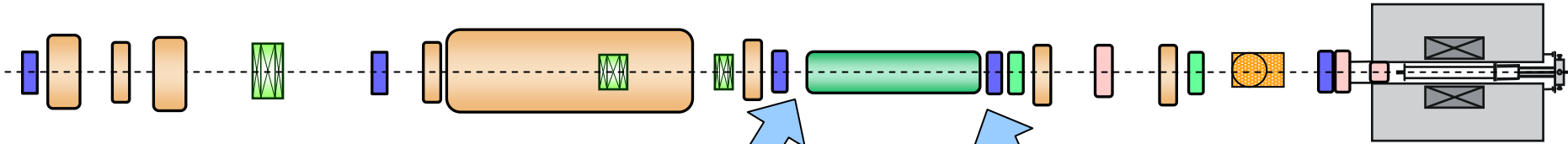
## Operational Parameters:

- Highly charged ions with  $M/q \leq 3$
- Beam intensity after decelerator linac: some  $10^5$  ions/pulse for  $U^{92+}$
- Repetition time: 10 s

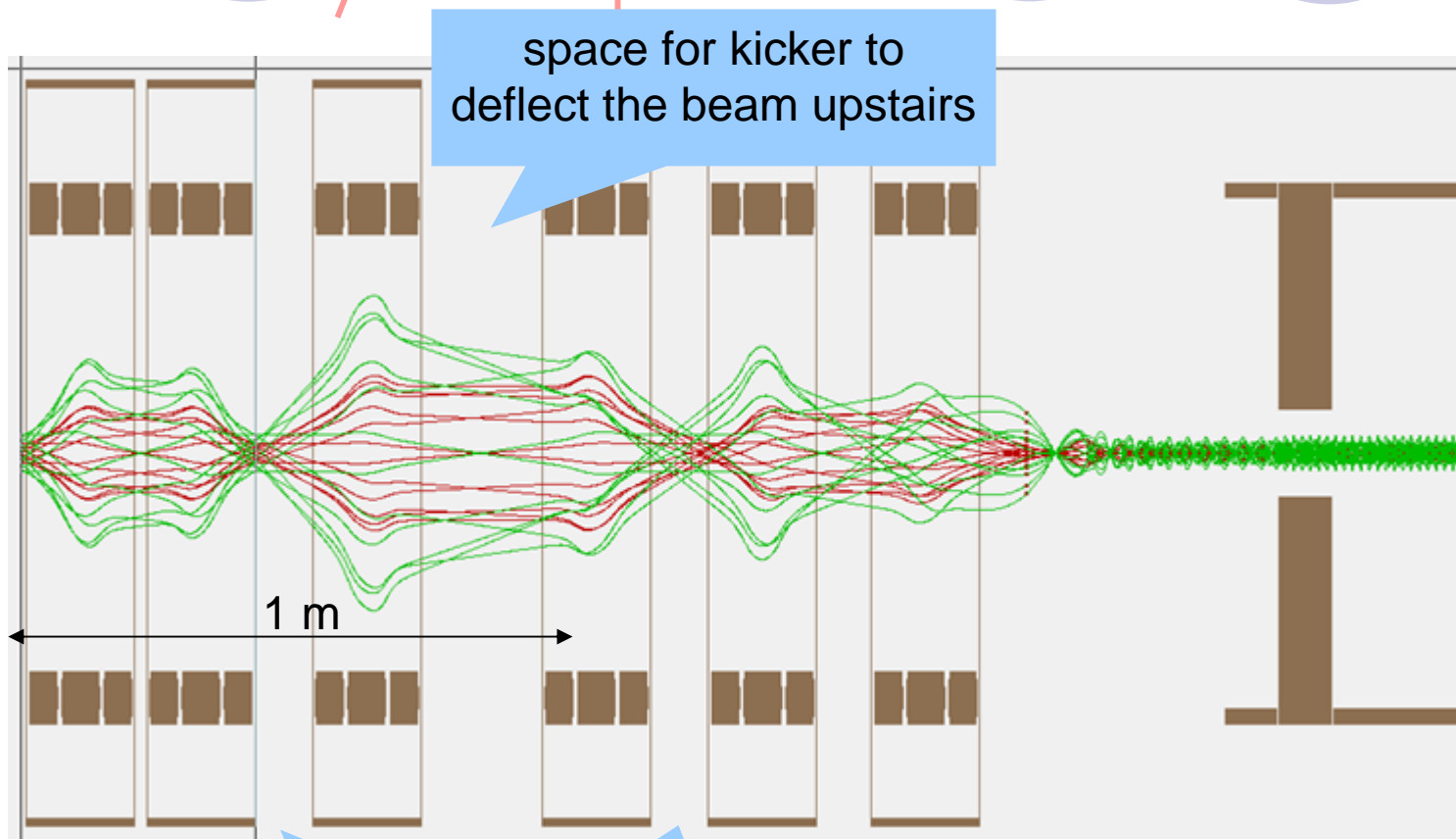


# IH-Structure & RFQ

4 MeV/u – 6 keV/u



# LE-Beam-Line using Tube-Lenses



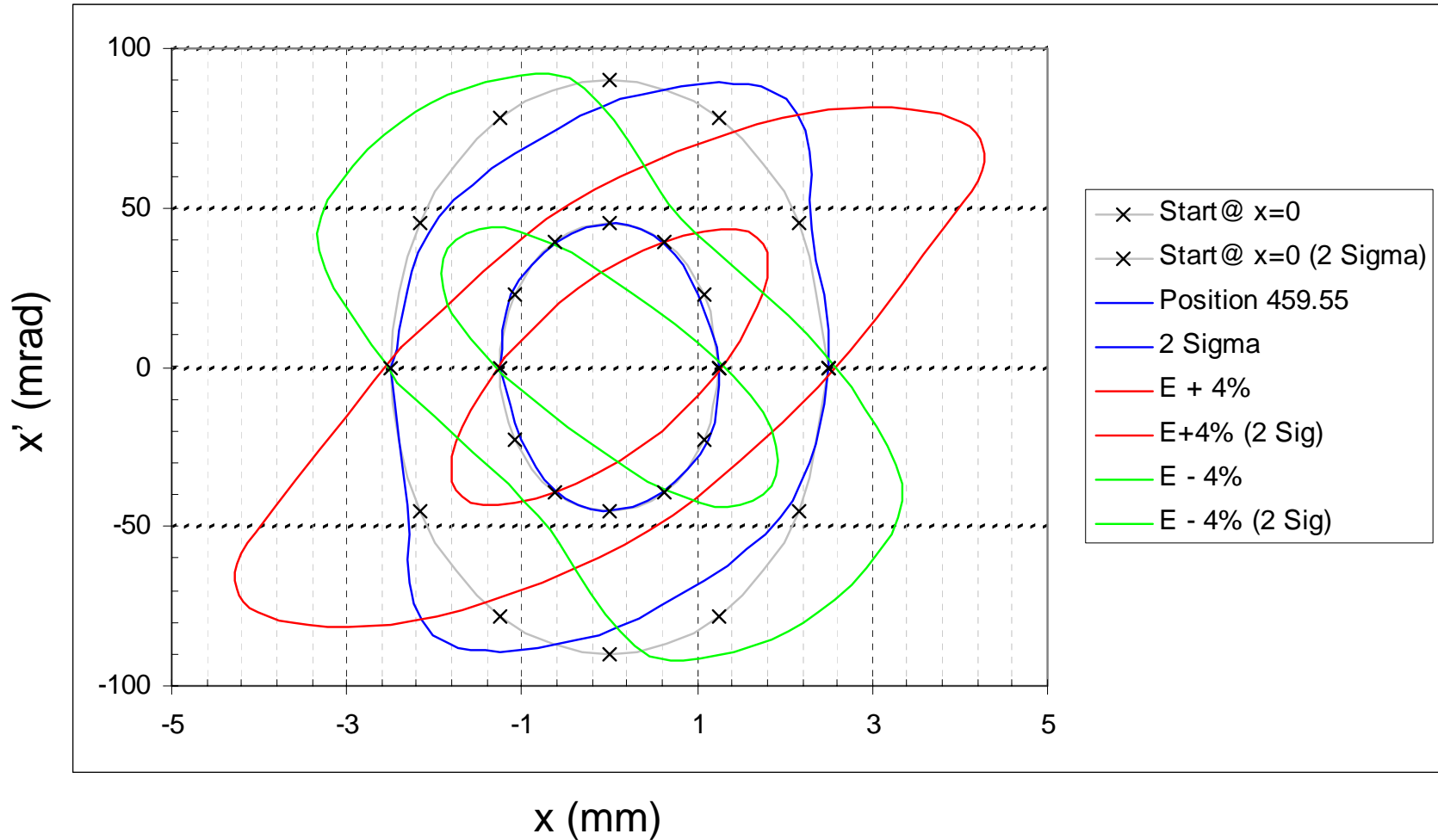
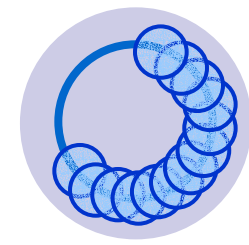
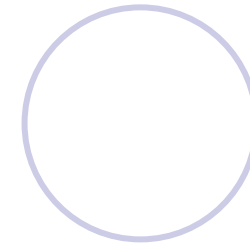
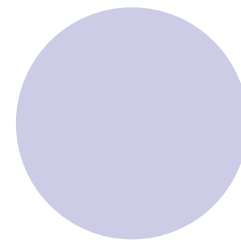
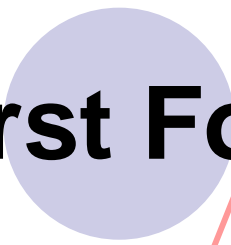
space for kicker to deflect the beam upstairs

1 m

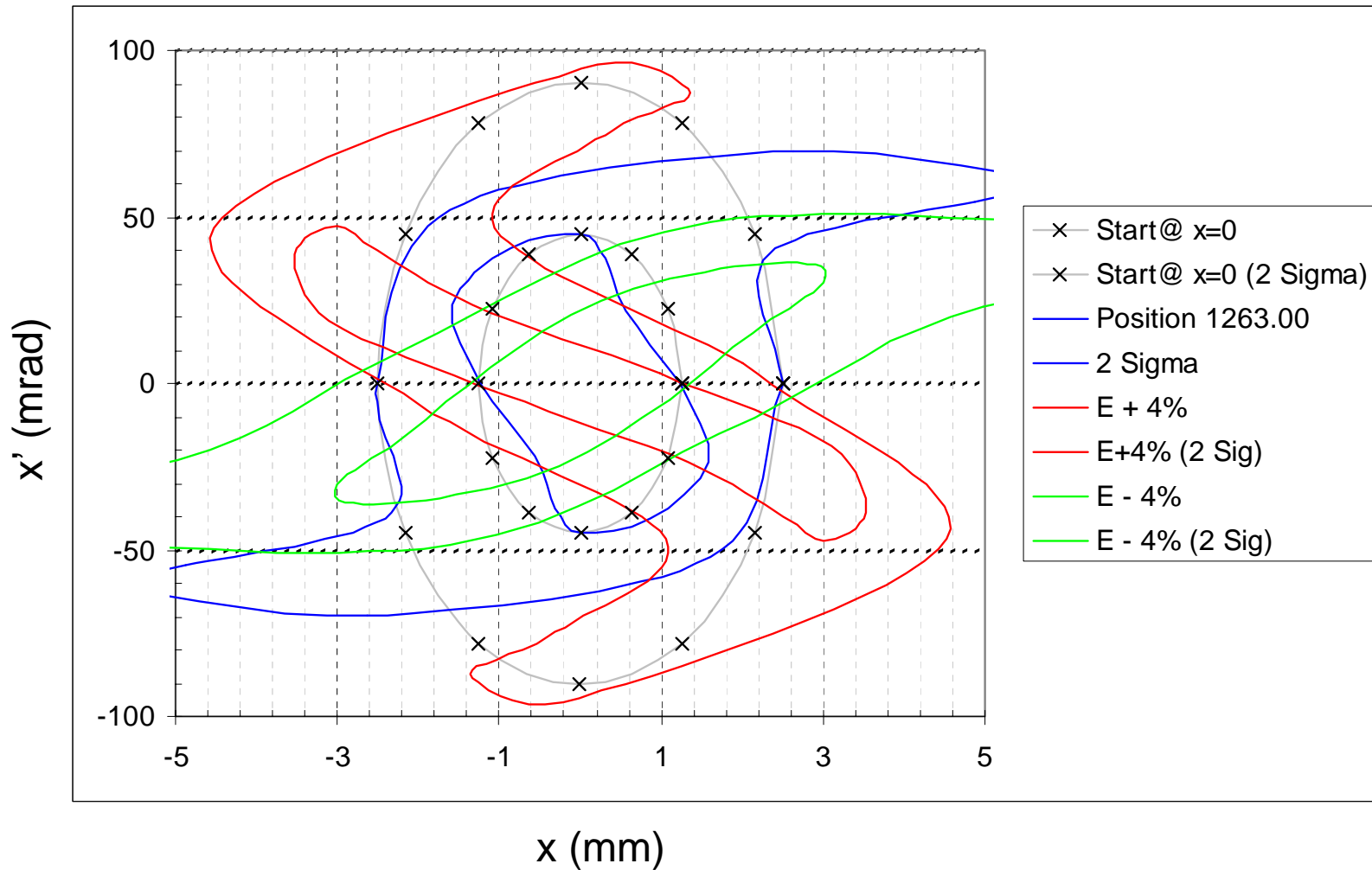
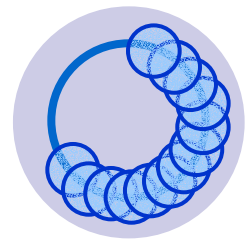
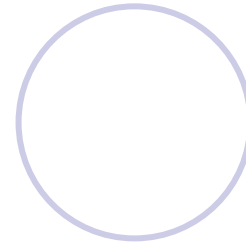
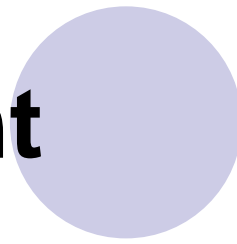
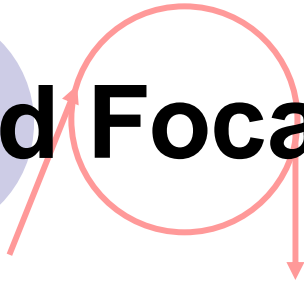
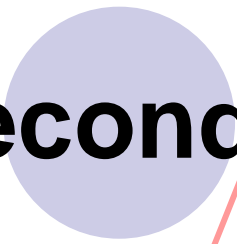
focal points for diagnostics and differential pumping



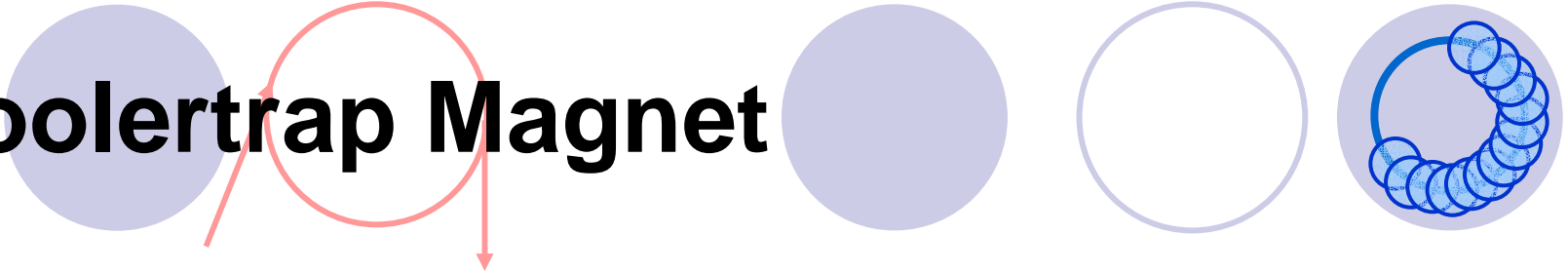
# First Focal Point



# Second Focal Point

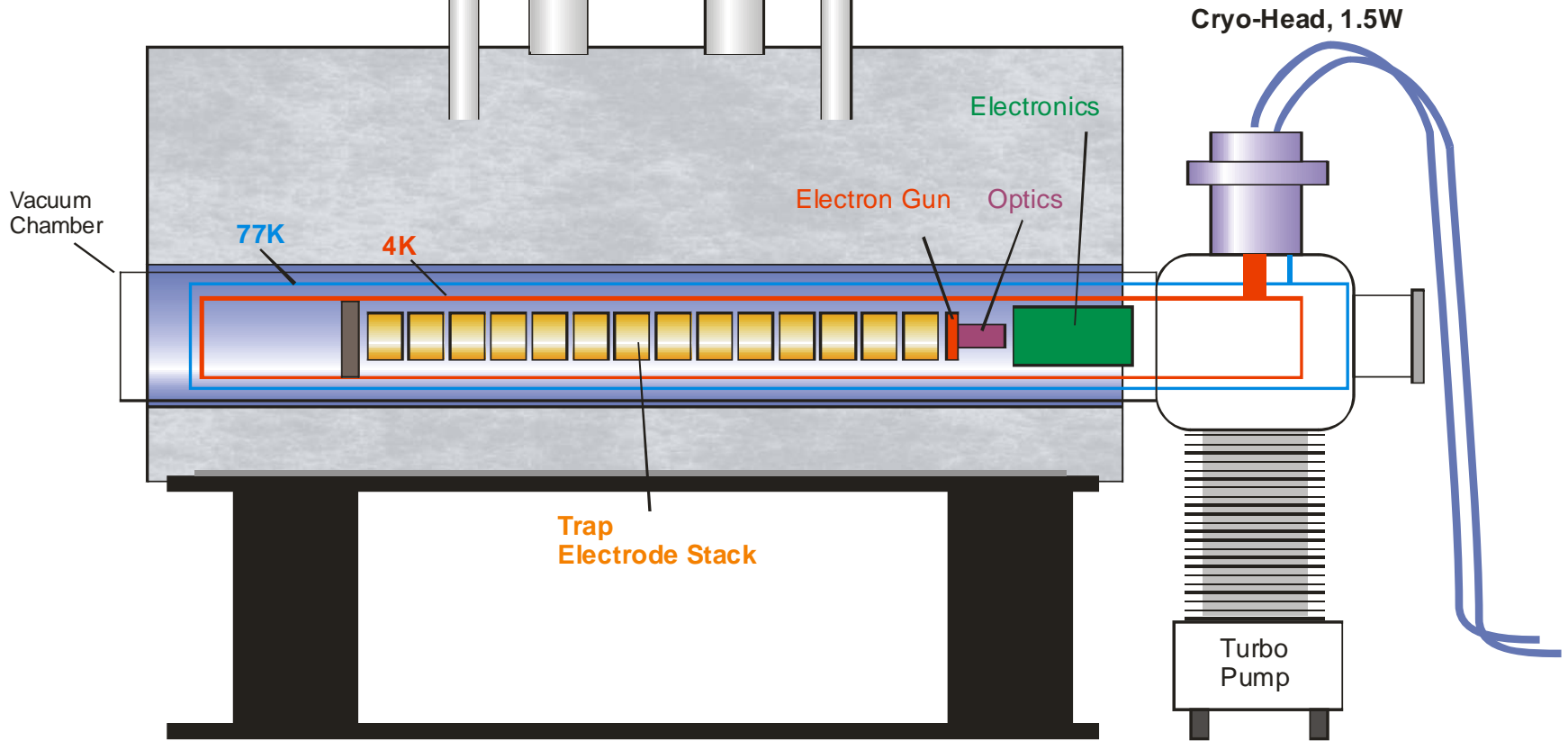


# Coolertrap Magnet



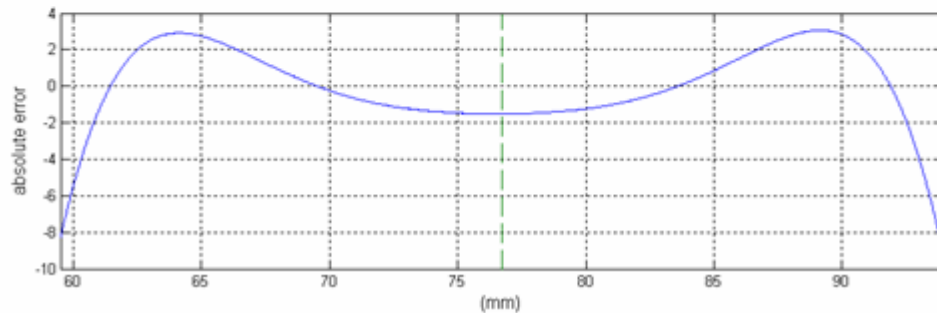
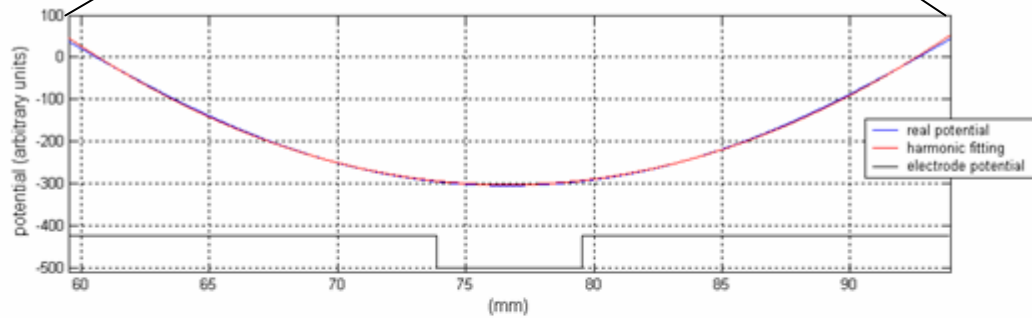
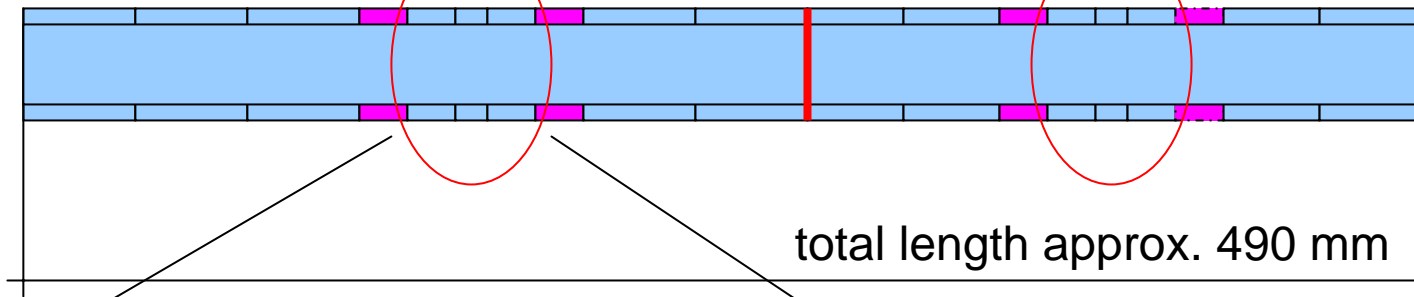
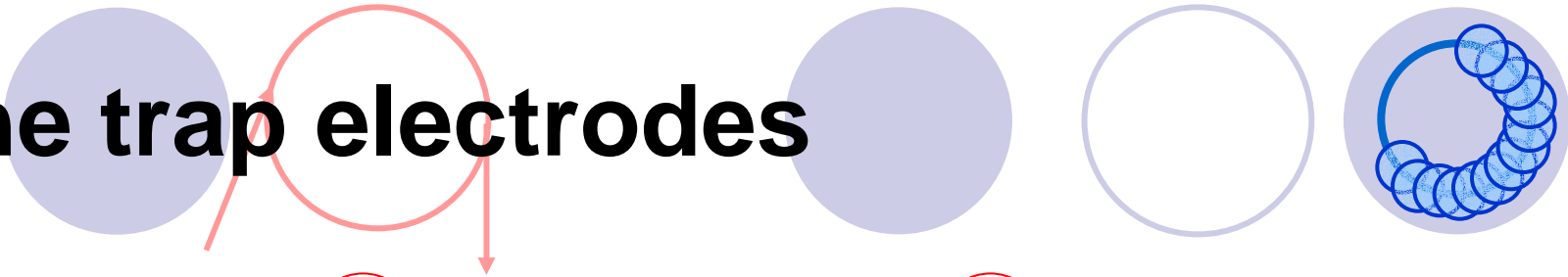
- Calc. done for 5T,  $\pm 4\%$   $\Delta E$ , 11 kV retardation
  - we get an energy spread of  $\pm 20\%$
- homogeneous part:
  - $\sim 400$  mm long (initial pulse  $0.9 \mu\text{s}$  long)
  - need to switch within 400 ns: 11 kV  $\rightarrow$  12.6 kV
  - inner diameter needed:  $> 10$  mm

# A cryogenic Trap

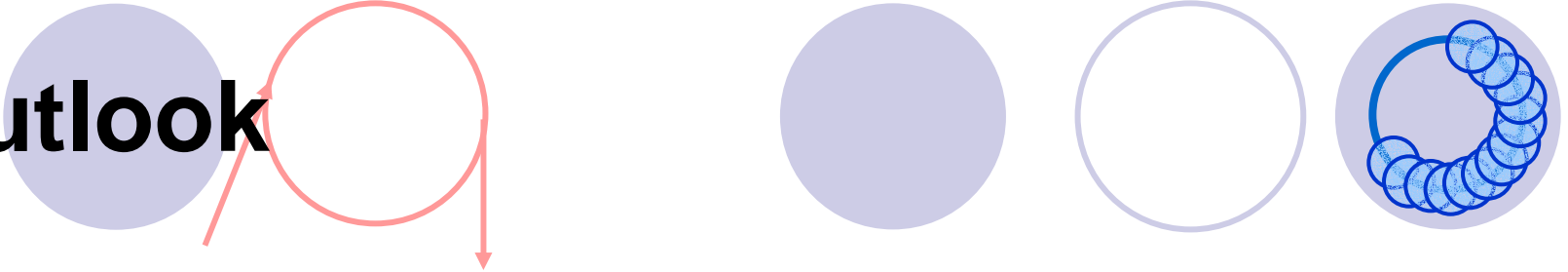




# The trap electrodes



# Outlook



- calls for tender to be placed for the magnet and the main decelerator elements
- continue detailed simulations
- construction starts 2005