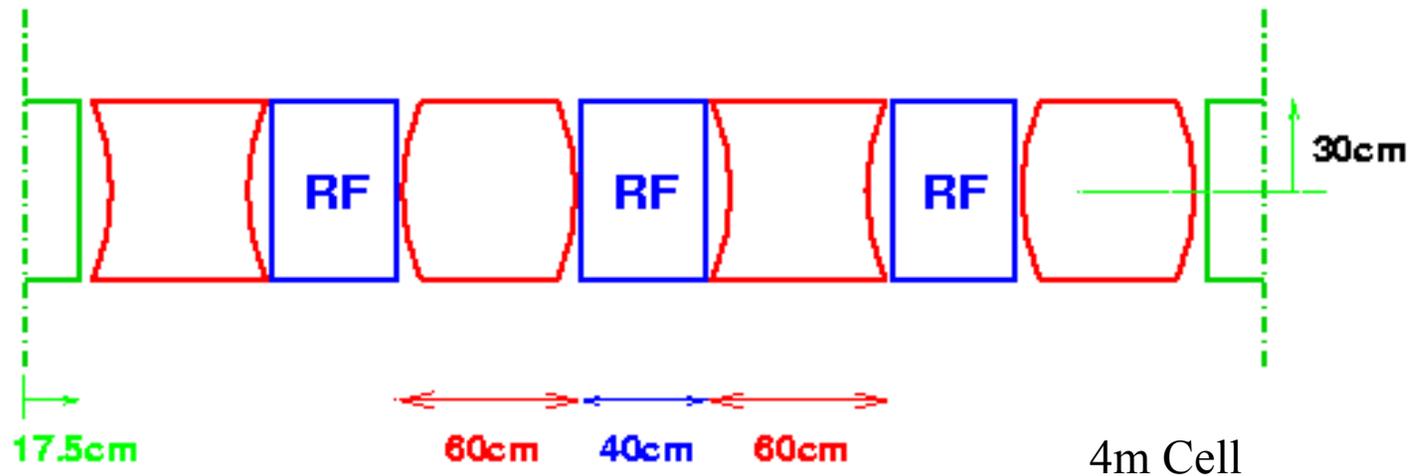


# Quad Cooling Channel Simulation

by COSY Infinity



- ï Muons (180MeV/c to 245MeV/c)
- ï **Magnetic Quadrupoles ( $k=2.88$ )**
- ï **Liquid H Absorber:  $-dE/dx = -12\text{MeV}/35\text{cm}$**
- ï **Cavities: Energy gain  $+12\text{MeV}/\text{Cell}$  to compensate the loss in the absorber**

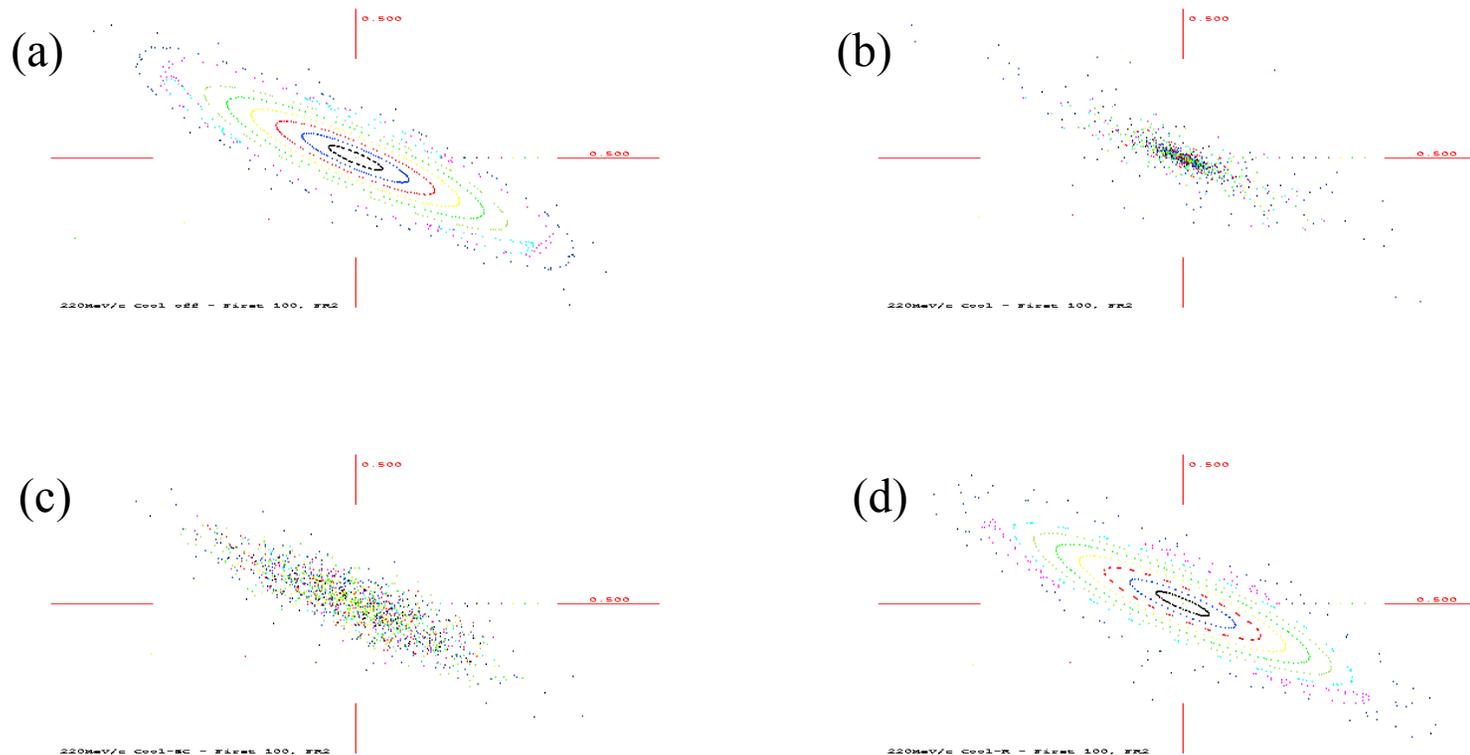
# Tracking the Quad Cooling Cells

Momentum: 220 MeV/c, Starting from  $x=2\text{cm}, 4\text{cm}, 0, 30\text{cm}$ , for 100 Cells

(a) Without Cooling (b) With Cooling (no scattering)

(c) With Cooling and Scattering

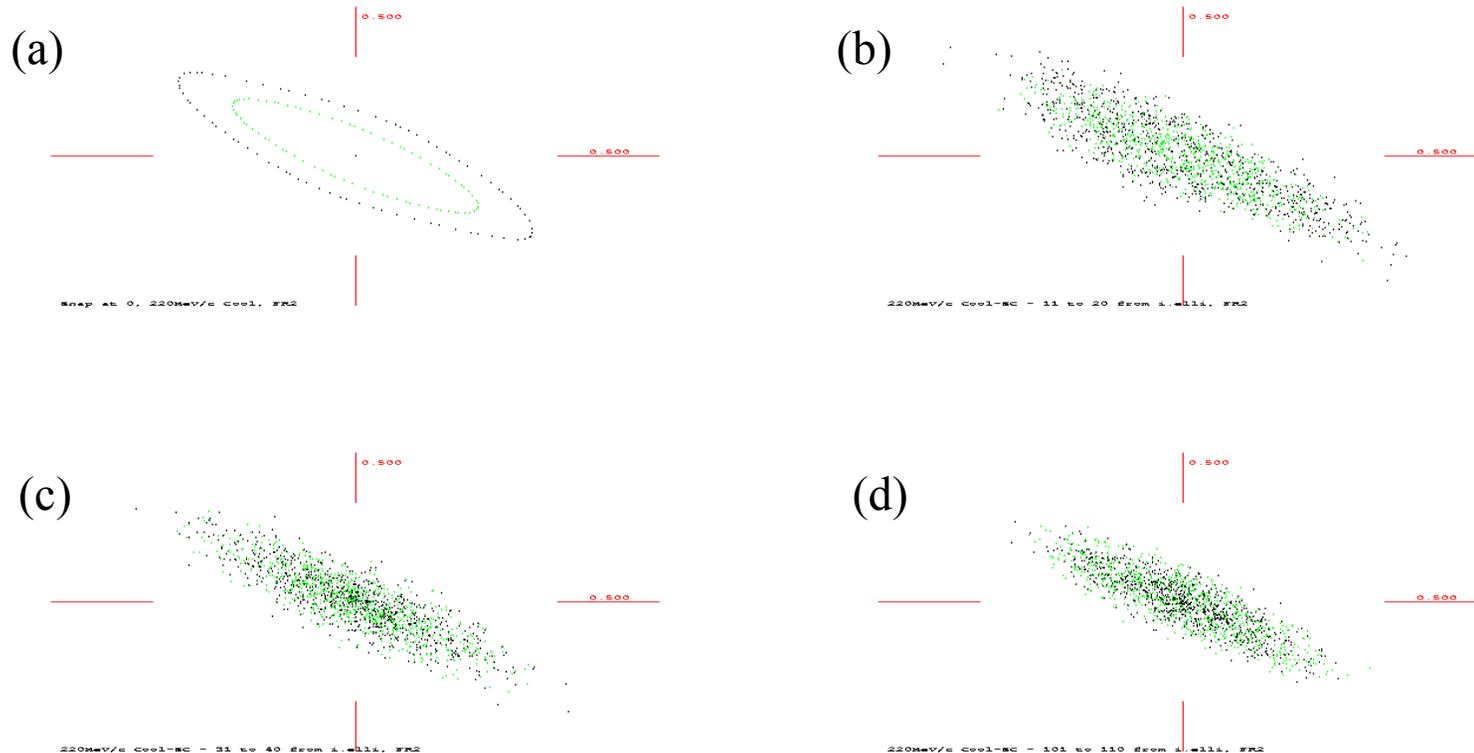
(d) Pseudo-Invariant Ellipses with Cooling (damping factor corrected)



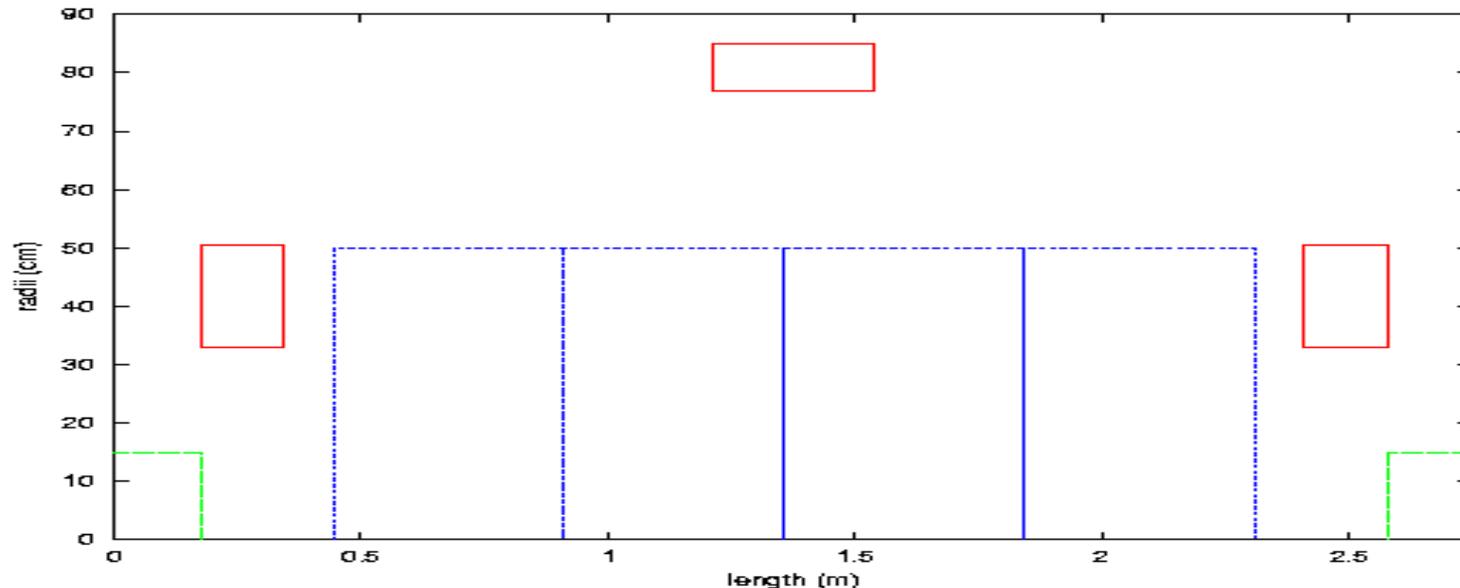
# Tracking the Quad Cooling Cells with Scattering

Momentum: 220 MeV/c, Starting from x=10cm, 15cm Pseudo-Invariant Ellipses

(a) Initial Ellipses (b) for 11-20 Cells (c) for 31-40 Cells (d) for 101-110 Cells



# sFOFO Cooling Channel Simulation by COSY Infinity



- i Muons (180MeV/c to 245MeV/c)
- ii sFOFO Solenoids (Study II 2.75m Cell)
- iii Liquid H Absorber:  $-dE/dx = -12\text{MeV}/35\text{cm}$
- iv Cavities: Energy gain  $+12\text{MeV}/\text{Cell}$  to compensate the loss in the absorber

# Tracking the sFOFO Cooling Cells

Momentum: 220 MeV/c, Starting from  $x=1\text{cm}, 2\text{cm}, \bar{0}, 15\text{cm}$ , for 100 Cells

(a) Without Cooling

(b) Normal Form representation of it

(c) With Cooling and Scattering

(d) Normal Form representation of it

