The Ring Branch of the future GSI exotic nuclei facility

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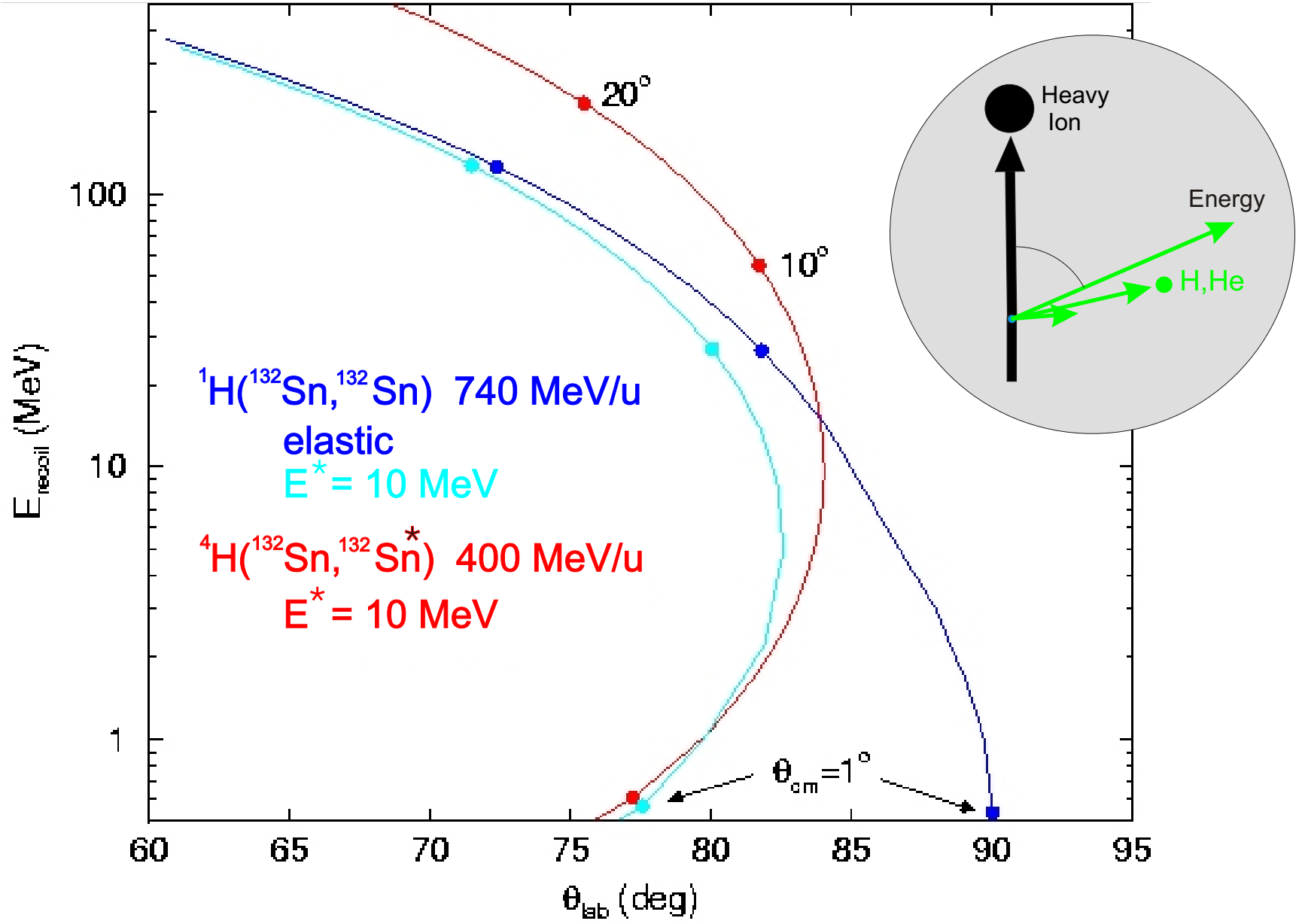
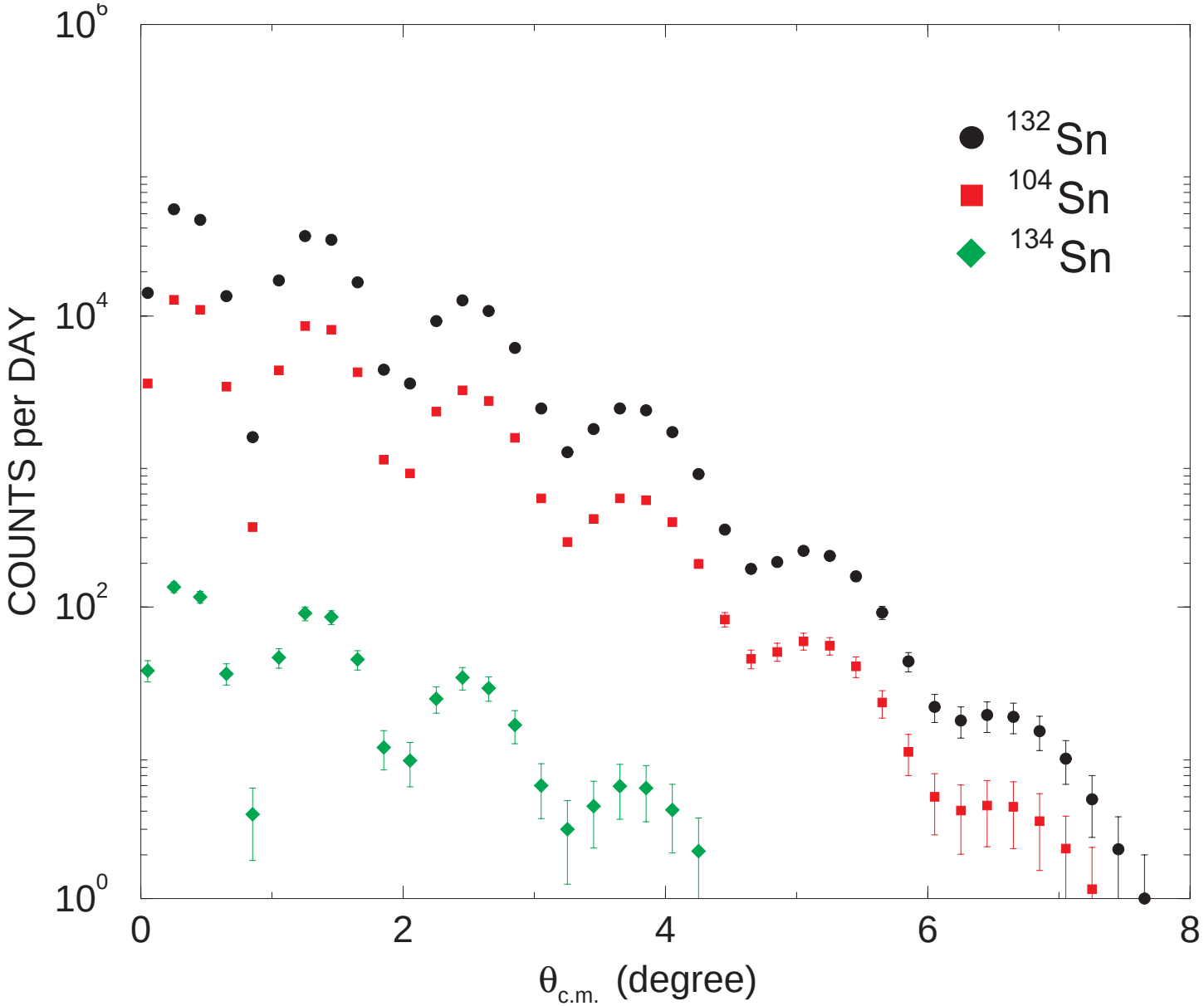
1.) kinematics of scattering on light hadrons
2.) simulated angular distribution
3.) the new storage rings
4.) detectors I
5.) detectors II
6.) reaction types
7.) work packages, collaborations

Scattering Kinematics

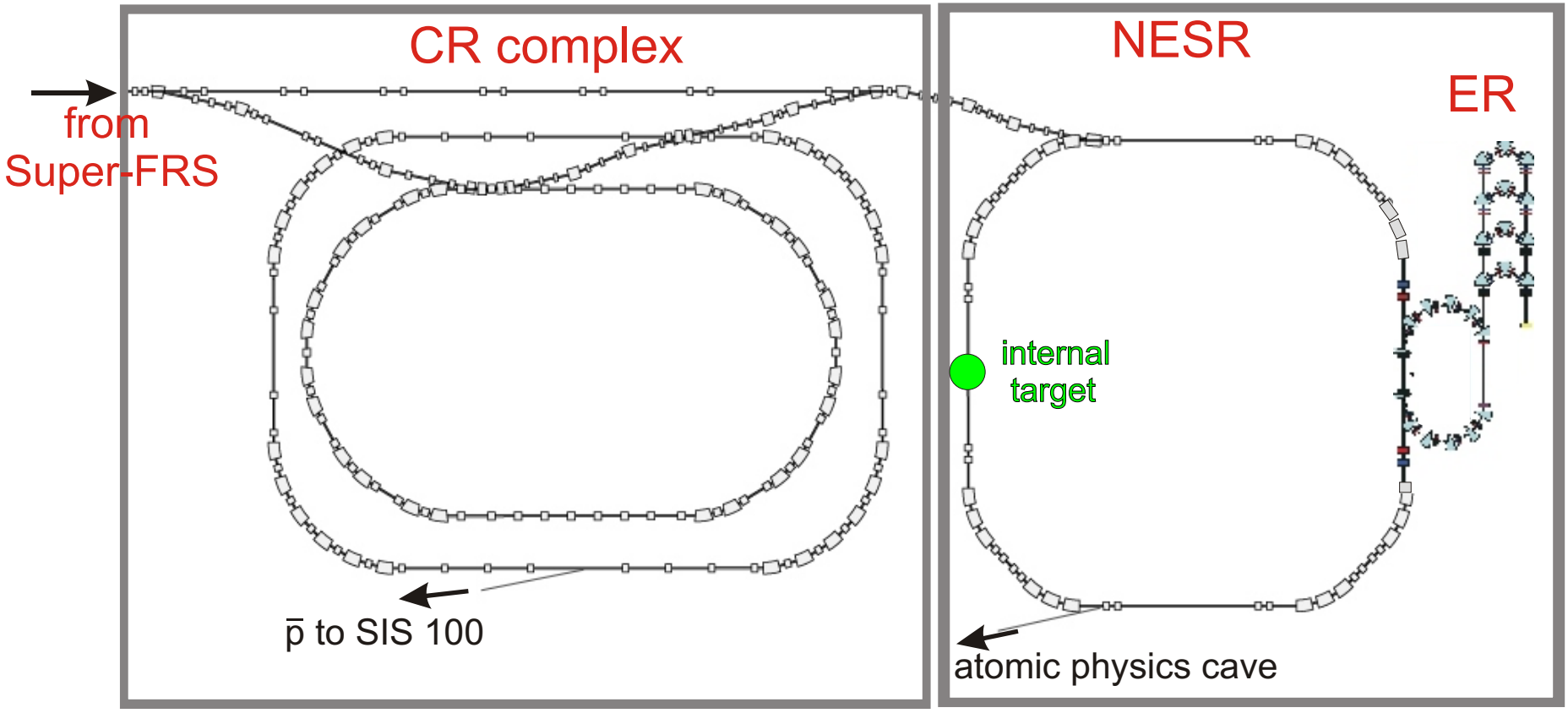


Giant Monopole Excitation in Sn

expected spectra

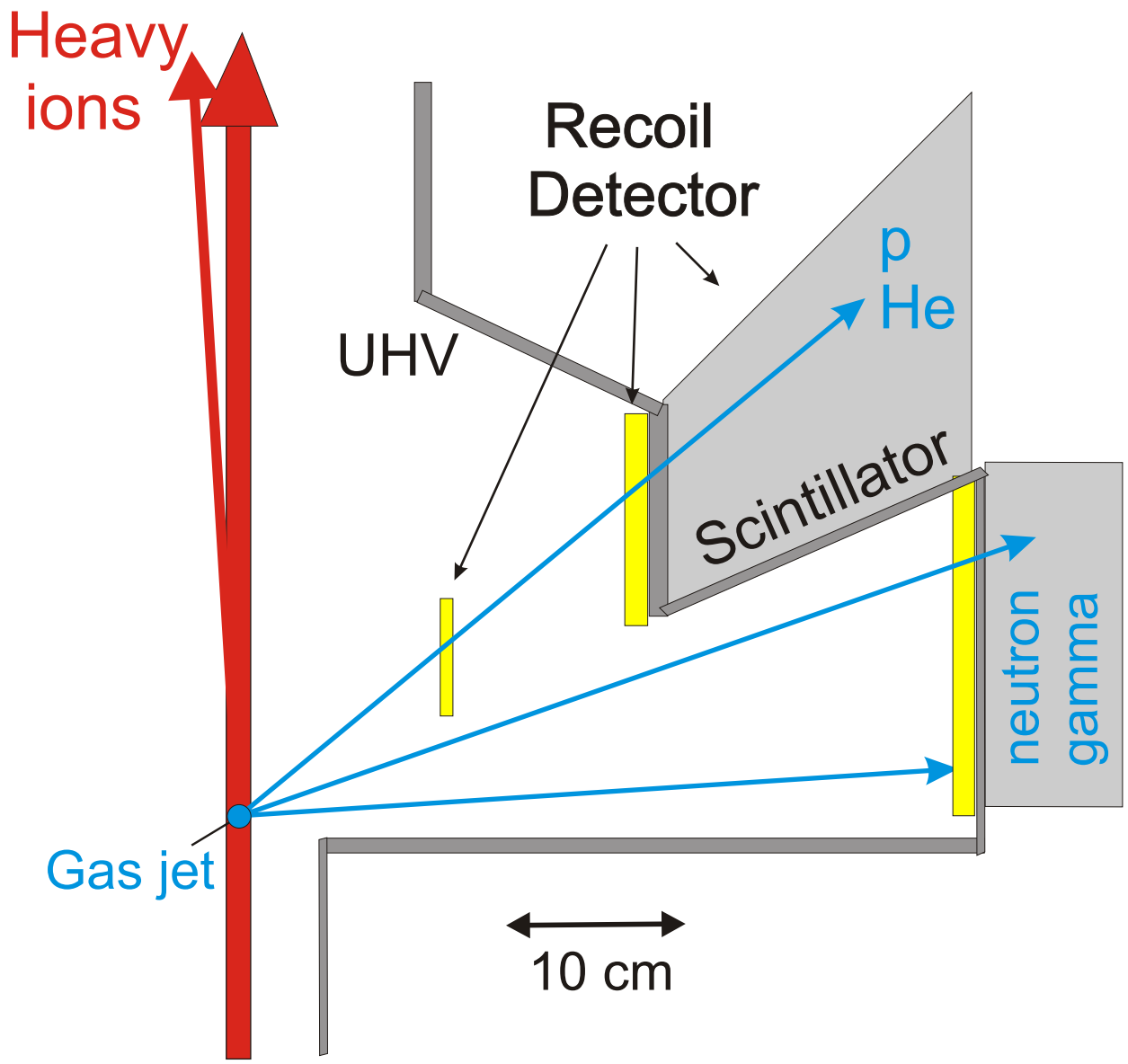


Planned Storage Rings

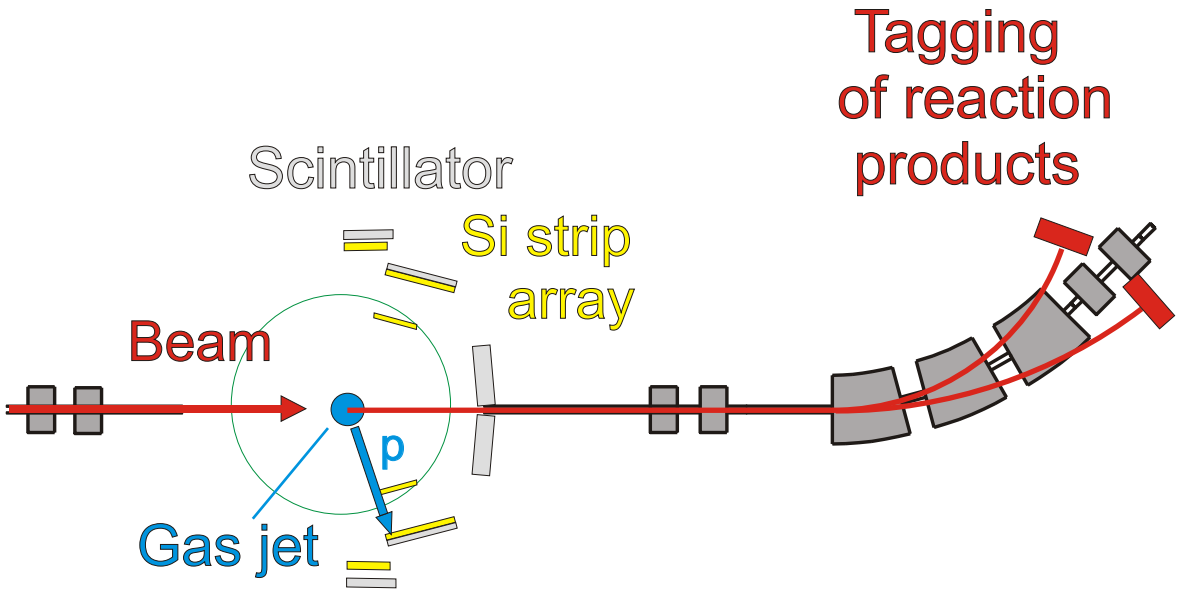


- short pulses (50ns) from Super-FRS fragment beams with large emittance
- bunch rotation to reduce velocity spread stochastic cooling at 740 MeV/u in 500ms
- deceleration in outer ring to 200-400 MeV/u
- electron cooling for further improvement of emittance
- internal targets

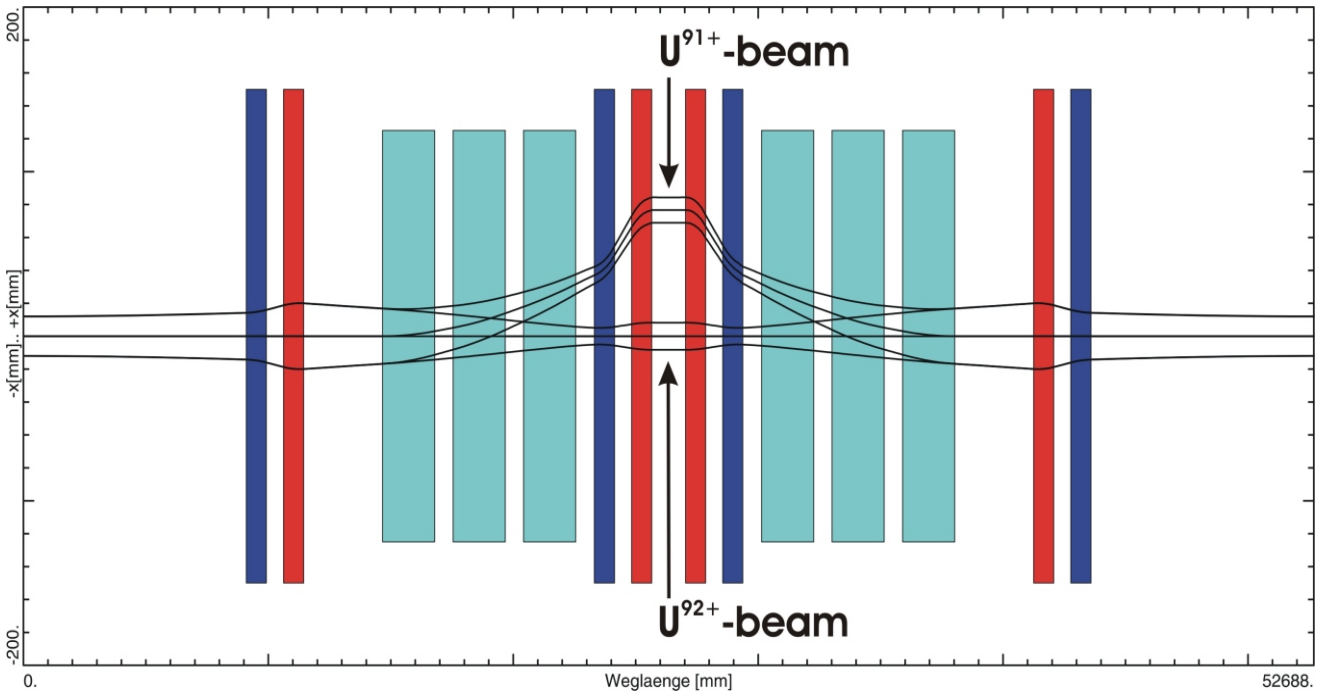
Possible Detector Set up



Detection of Heavy Ion after Reaction



example U in two atomic charge states



Reaction Studies with Stored Beams

Elastic scattering (p,p), ( )

matter radius, matter distribution (r)
optical potential

Inelastic scattering (p,p'), (')

deformation parameters, B(E2) values,
transition densities, giant resonances

Transfer reactions (p,d), (p,t), (p, ^{3}He), (d,p)

single particle structure, spectroscopic factors
neutron pair correlations
neutron capture cross sections

Charge exchange reactions (p,n), (^{3}He,t)

Gamov-Teller transitions

Knock-out reactions (p,2p), (p,pn)

ground state configurations,
momentum distributions