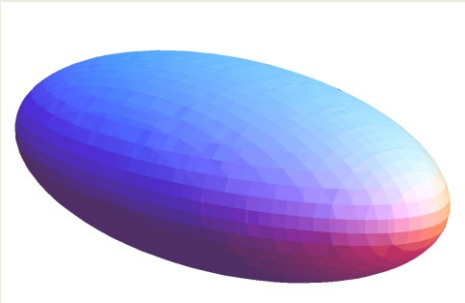
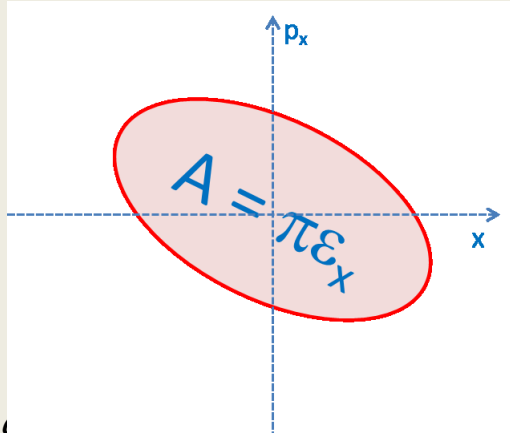


Get in touch with Accelerator Physics

The transverse phase space volume of a particle beam



can be determined by measuring its emittances ϵ_x ϵ_y , i.e. its projections in x - p_x and y - p_y planes,

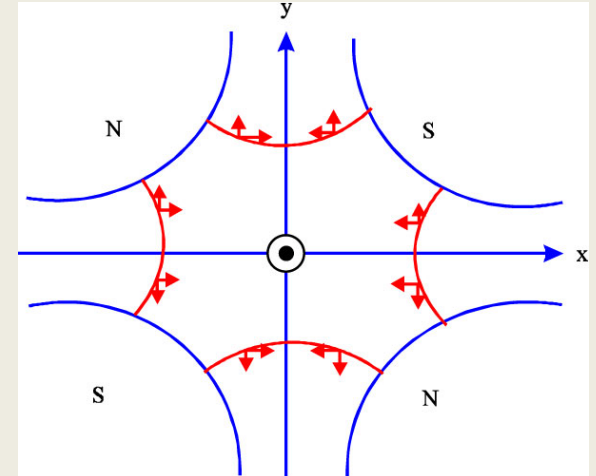
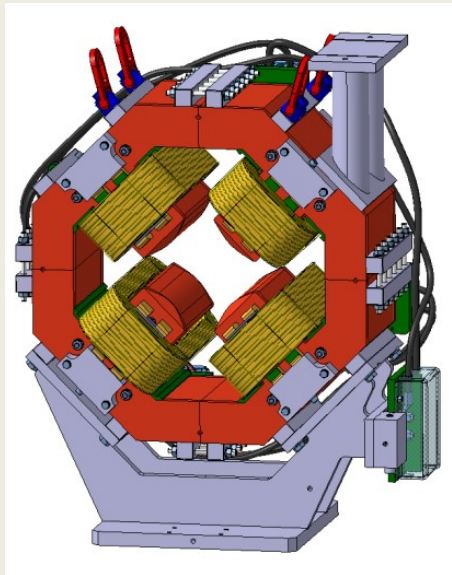


and the corresponding correlations.

Prof. K. Aulenbacher, Prof. A. Meseck, Prof. F. Hug,
MAMI and MESA Team

Quadrupole Scan technique

Using the quadrupole-scan technique, the emittances can be measured. For this, quadrupole



strengths are varied and corresponding beam sizes are measured on a screen.

Get in touch with Accelerator Physics

1) Measure the magnetic fields of the quadrupole magnets

2) Simulate the quadrupole scan taking into account the magnetic measurements

3) Carry out quadrupole scans at MAMI facility

* The order of step 2 and 3 can be reversed.

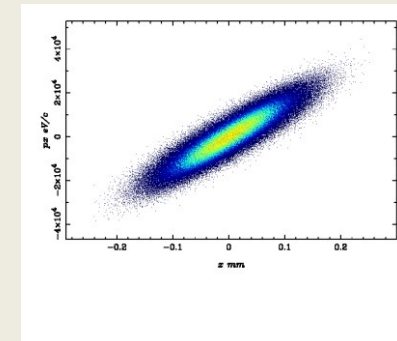
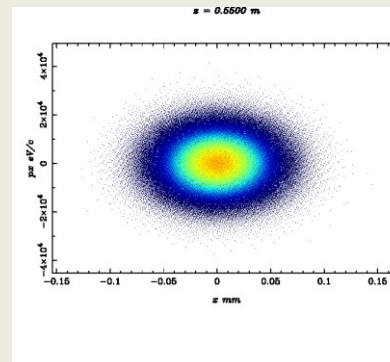
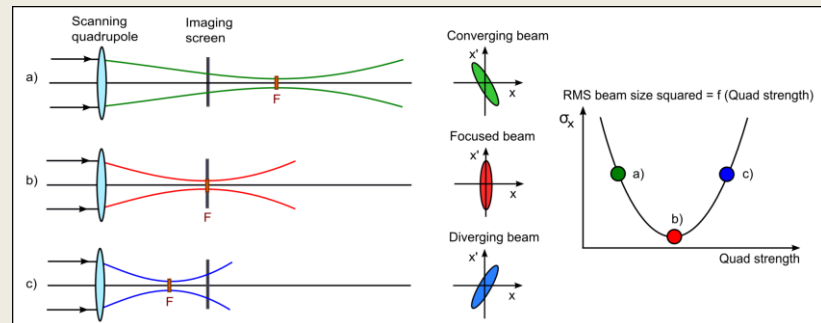
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Learn about

- Magnets
- Magnetic field measurements
- Beam dynamics
- Particle simulation
- Beam profile measurements
- MAMI operation
- Data analysis

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## Quadrupole Scan Calculation and Simulation



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