HK-6

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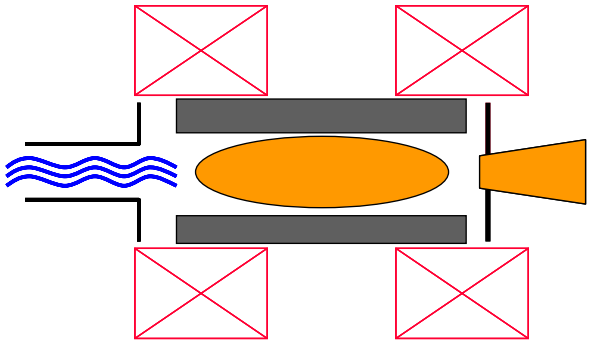
Overview

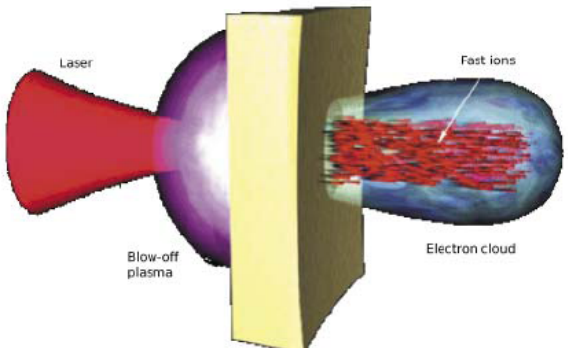
Ion source development:

- High charge state ion sources (ECRIS) Simulations (HK-6-2), Extraction and beam transport, Correction of x,y coupling (HK-6-3)
- High current rf proton-source development (no slide)
- Laser driven p-beams with TNSA (HK-6-1)

Electron Cyclotron Resonacne Ion Source



TNSA (Target Normal Sheath Acceleration)



Simulations for ECR Sources

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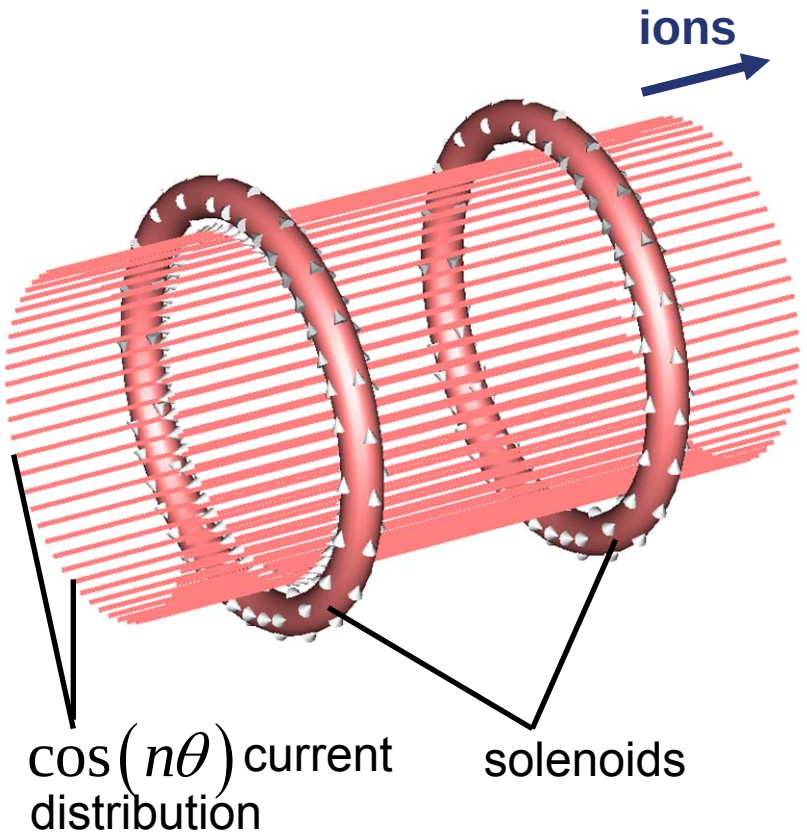
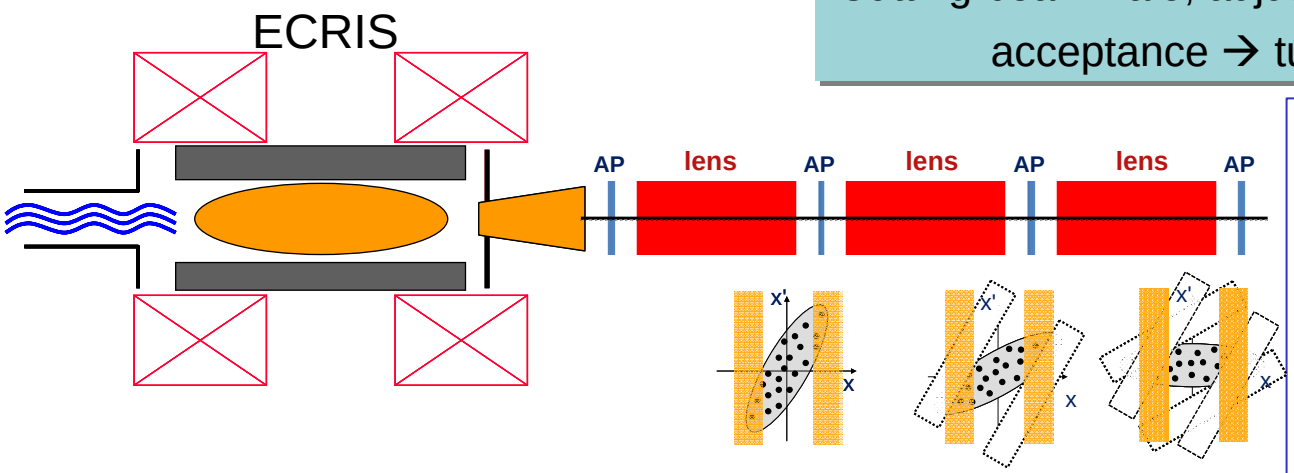
- **Heavy Ion Source:**
  - Magnetic particle trap
  - Solenoidal + multipole fields

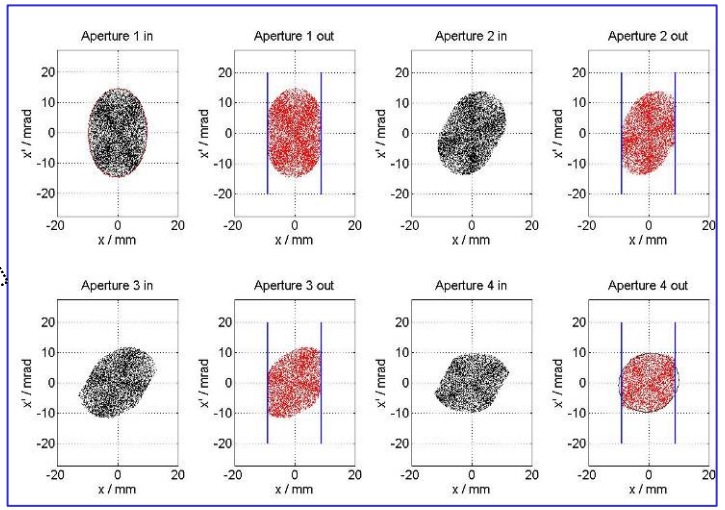
- **Simulations:**
  - Setup of current coils
  - (static) field distribution
  - Determination of magnetic mirror ratio $\frac{B_{\max}}{B_{\min}}$
  - Particle tracking

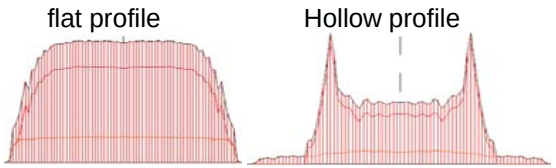


Transport and manipulation of beams from ECR ion sources

Cutting beam halo, adjustment of channel acceptance → tuning tool



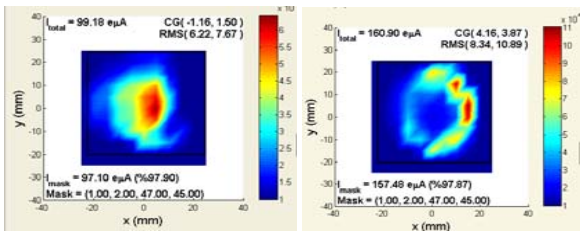




Matched extraction

Mismatched extraction

x,y-Coupling due to solenoid field
→ Compensation with skew quads



$$\varepsilon_{4D} = \det \Sigma_{4D} = \begin{vmatrix} \Sigma_{xx} & \Sigma_{xy} \\ \Sigma_{yx} & \Sigma_{yy} \end{vmatrix}$$