

ESR-ACC  
~~Iron~~ E Log:

$$U_{\text{e-cool}} = 5467.6884 \text{ V}$$

$$U_{\text{acc}} = U_{\text{offset}} = +90 \text{ V}$$

$$I_c = 50 \text{ mA}$$

Correction for  $e^-$  space-charge effect  
 ( $e^-$ -s get shaded by the ions?):

$$U_{\text{eff}} = U_c - \frac{113 \cdot I_c}{\sqrt{1 - \left(\frac{e U_c}{m_e c^2} + 1\right)^2}}$$

From Constan and Yurii's  
 Thesis

$$v_{\text{ion}} = c \cdot \sqrt{1 - \frac{1}{\left(\frac{e U_{\text{eff}}}{m_e c^2} + 1\right)^2}}$$

Method 1,

$$E_{\text{Beam}} [\text{MeV/u}] = \frac{U_{\text{eff}}}{m_e [\text{u}] \cdot 10^6} = \underline{10,06064553 \text{ MeV/u}}$$

$$U_{\text{eff}} = 5519,068014887742 \text{ V}$$

$$m_e [\text{u}] = 0,000548579909$$

Method 2,

$$E_{\text{Beam}} [\text{MeV/u}] = (\gamma - 1) \cdot \frac{u}{c^2} = \underline{10,06064583 \text{ MeV/u}}$$

$$u = 931,49410242 (28) \frac{\text{MeV}}{c^2}$$

$$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} = 1,0108005467514816$$

The  $e^-$ -cooler was the same for the  $^{124}\text{Xe}$  and  $^{118}\text{Te}$  beams  
 $\Rightarrow$  defines the speed of the ions = MeV/u