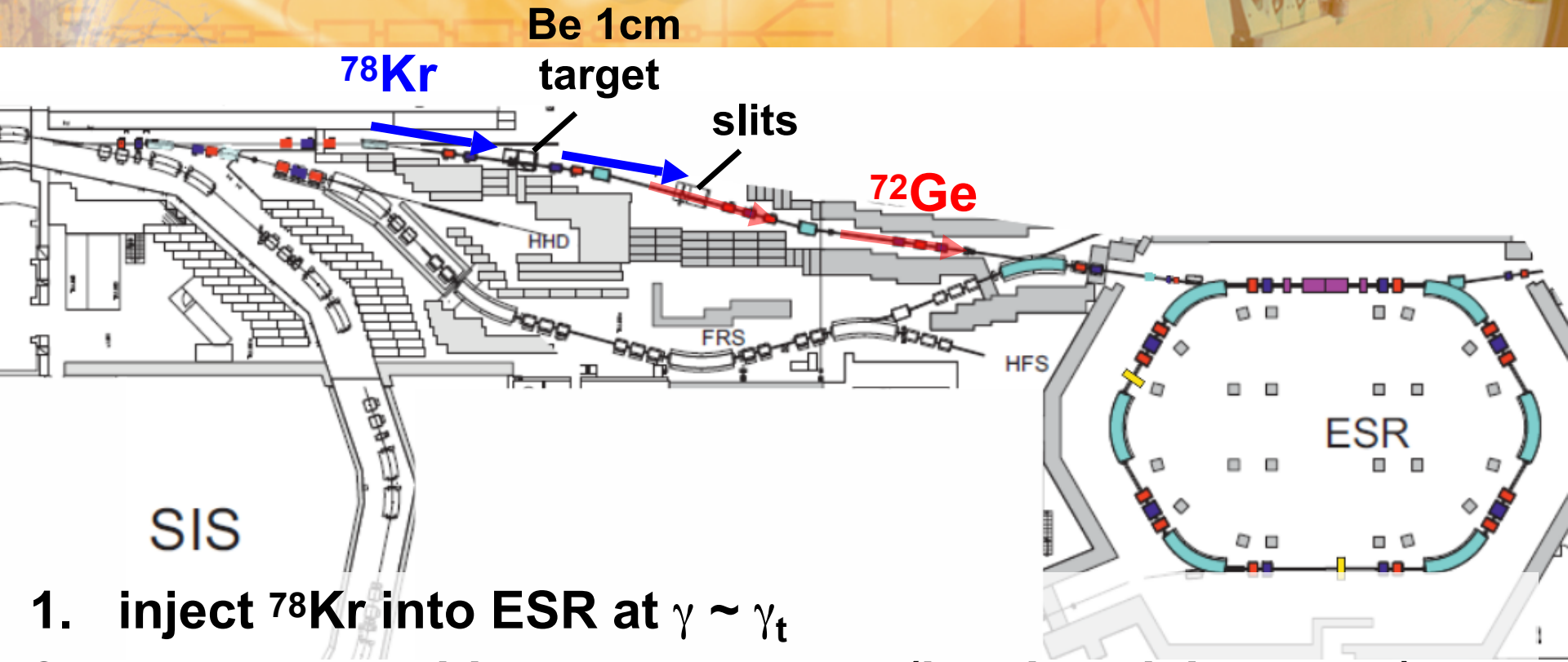
Steps in ESR Setup



1. inject ^{78}Kr into ESR at $\gamma \sim \gamma_t$
2. measure γ_t with electron cooler (isochronicity curve)
3. inject ^{78}Kr through target, measure target thickness
4. set ESR to Bρ of isochronous ^{72}Ge, optimize injection
5. new E_{SIS} for ^{72}Ge at same Bρ after target
6. Check resolution with frequency lines of same A/Z = 2.25
7. ESR fine tuning, cut Bρ distribution with scrapers

Setting Details

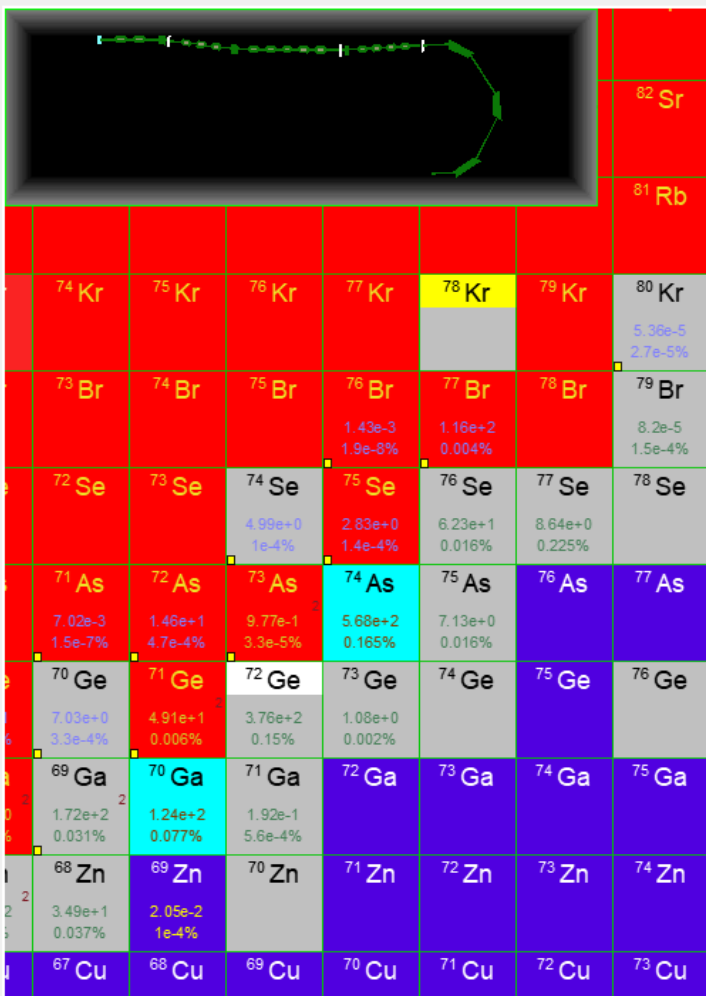
γ_t = 1.41, E/m = 381.9 MeV/u => $B\rho_{ESR}$ (^{72}Ge) = 6.9401 Tm

Target 1850 mg/cm^2 Be => E_{SIS} = 453.9 MeV/u

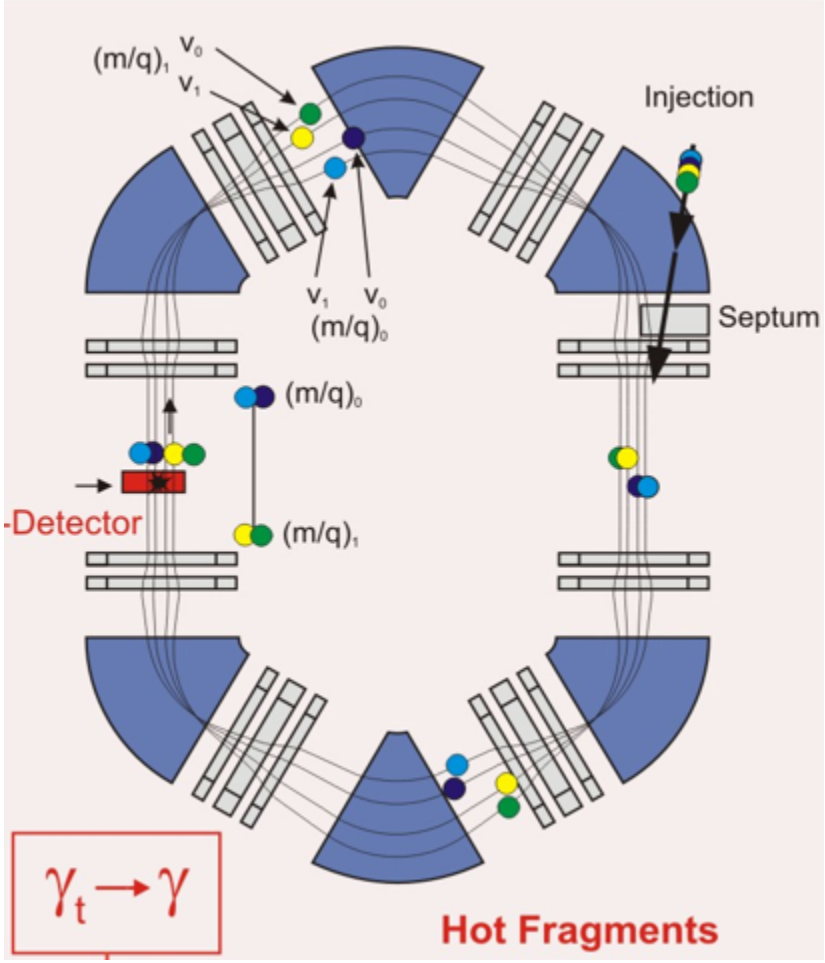
LISE file of beamline and ESR acceptance

Low transmission (~ 0.2 %) only 380 ^{72}Ge / 10^9 Kr

Expected fragments in order of intensity:
^{74}As, ^{72}Ge, ^{69}Ga, ^{67}Zn, ^{76}Se, ^{70}Ga, ^{77}Br, ^{65}Cu, ^{62}Ni, ^{60}Co, .. , ^{68}Zn, …



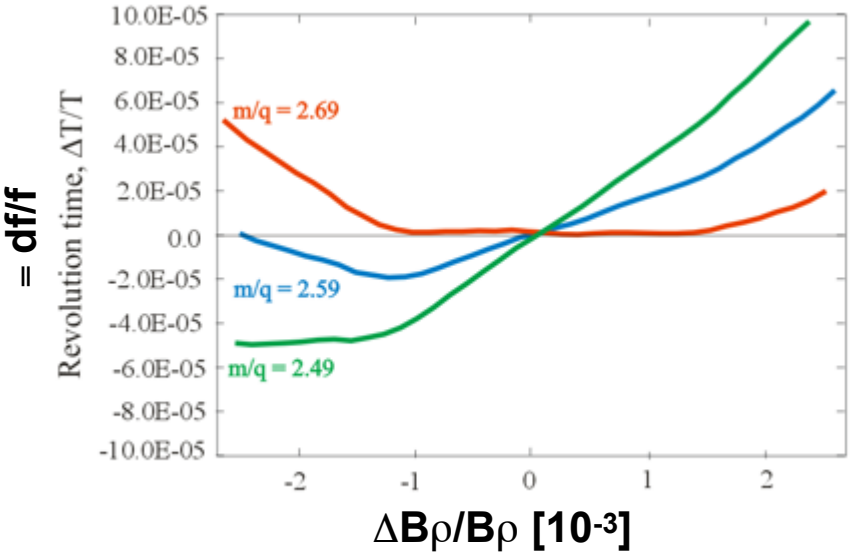
ESR Isochronous Mode



$$\frac{\Delta f}{f} = -\frac{1}{\gamma_t^2}\frac{\Delta(m/q)}{m/q} + \frac{\Delta v}{v}\left(1-\frac{\gamma^2}{\gamma_t^2}\right)$$

γ_t is not constant depends on orbit in ESR

„Cooler curve“ as test of isochronicity
Scan beam Bρ with electron cooler



transform by calculation to other m/q or γ