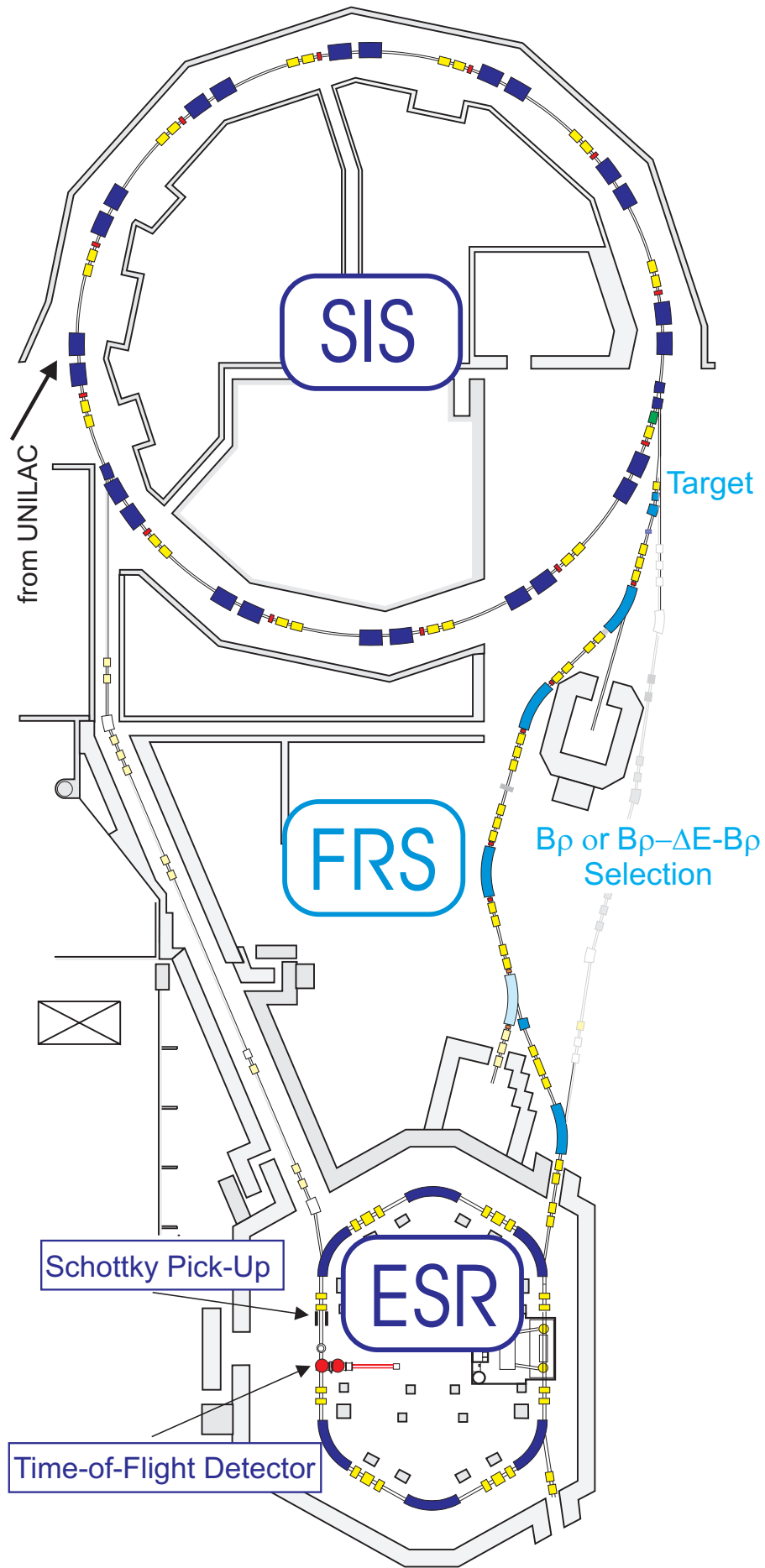


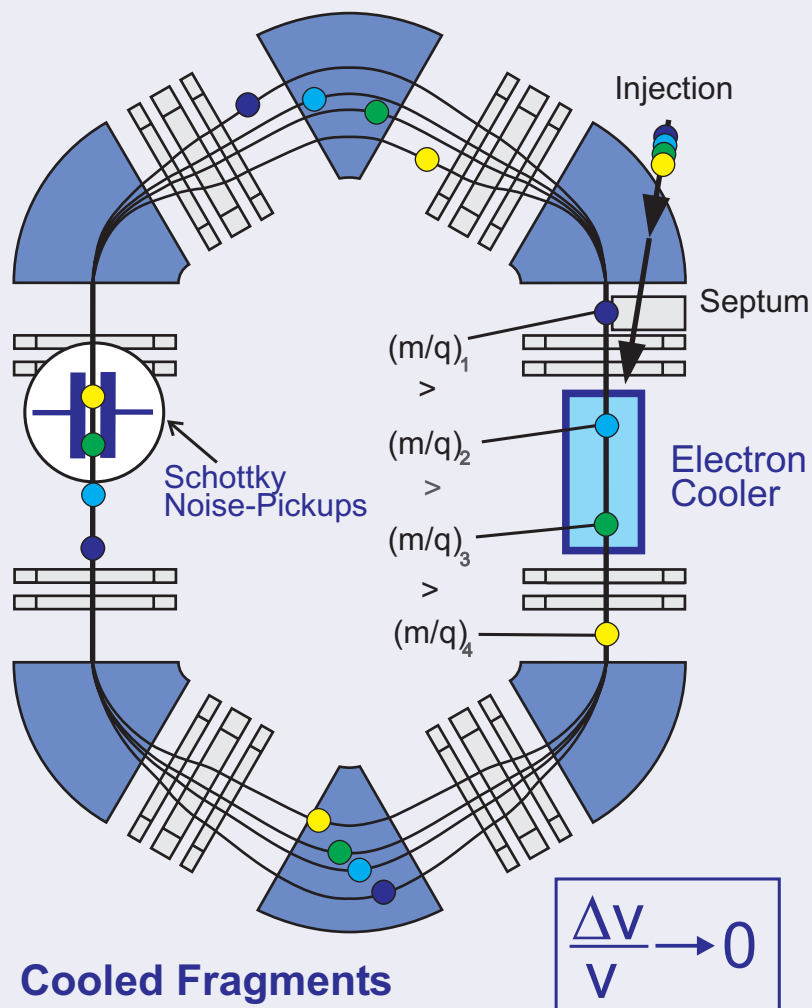
Mass Measurements of Stored Exotic Nuclei

Yu.A. Litvinov, J. Stadlmann, F. Attallah, K. Beckert, P. Beller,
F. Bosch, D. Boutin, H. Eickhoff, M. Falch, B. Franczak, B. Franzke,
H. Geissel, M. Hausmann, E. Kaza, Th. Kerscher, O. Klepper, H.-J. Kluge,
C. Kozhuharov, K.E.G. Löbner, M. Matos, G. Münzenberg, N. Nankov,
F. Nolden, Yu.N. Novikov, Z. Patyk, W. Quint, T. Radon, H. Reich,
H. Schatz, C. Scheidenberger, M. Steck, Z. Sun, L. Vermeeren, H. Weick,
M. Winkler, T. Winkler, H. Wollnik

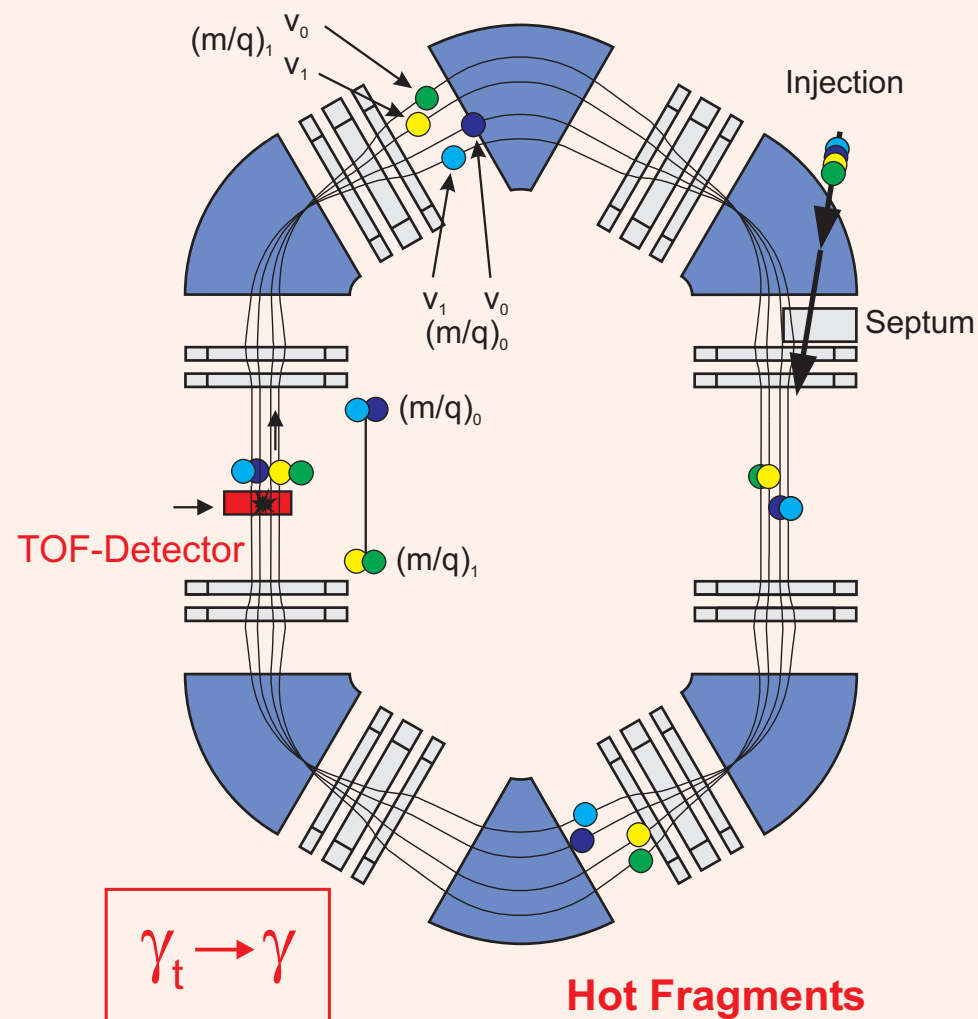
1. Overview of the two used methods
2. Status and results of Schottky Mass Spectrometry
3. Status and results of Isochronous Mass Spectrometry
4. Conclusion



SCHOTTKY MASS SPECTROMETRY

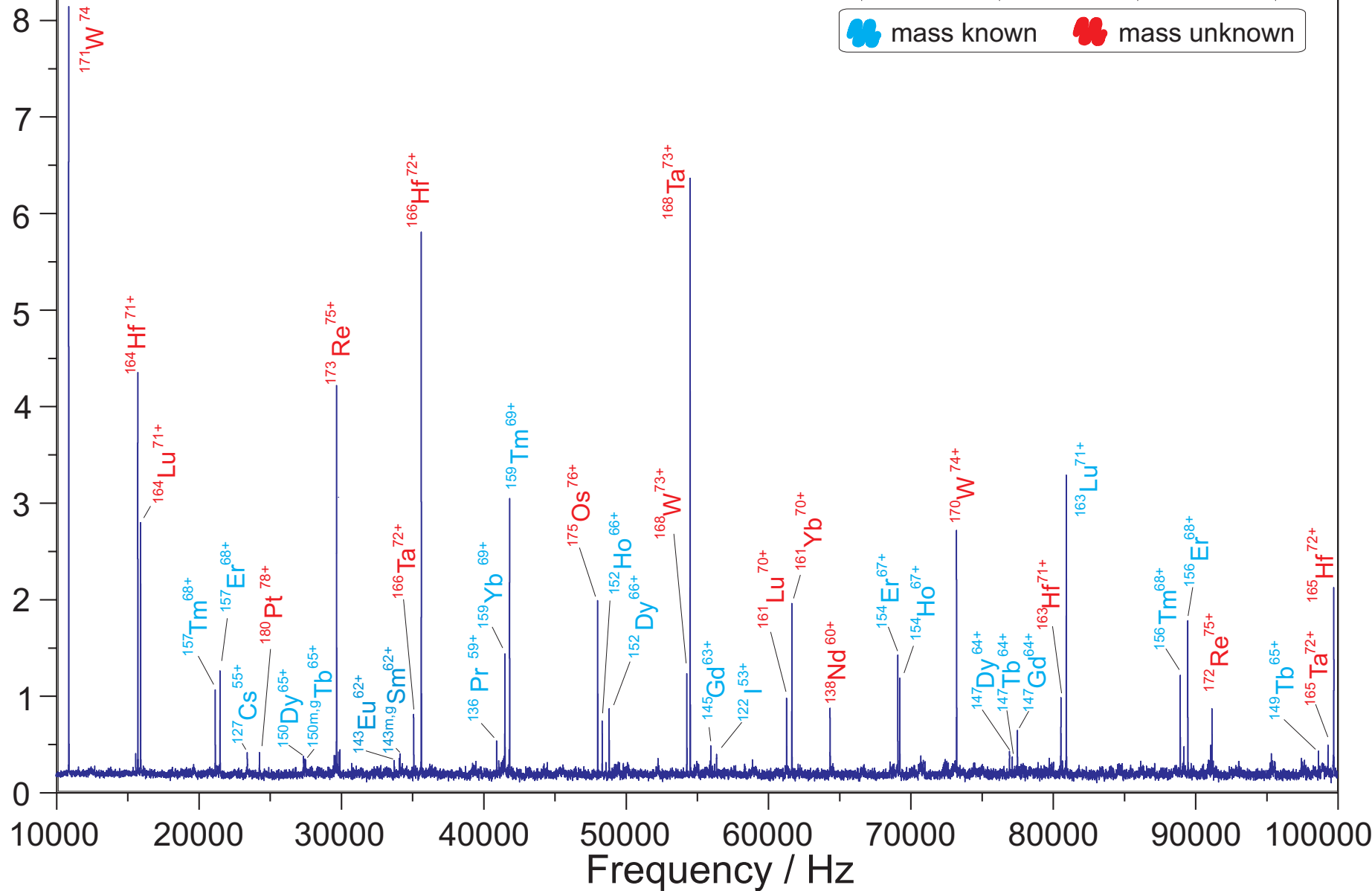


ISOCRONOUS MASS SPECTROMETRY



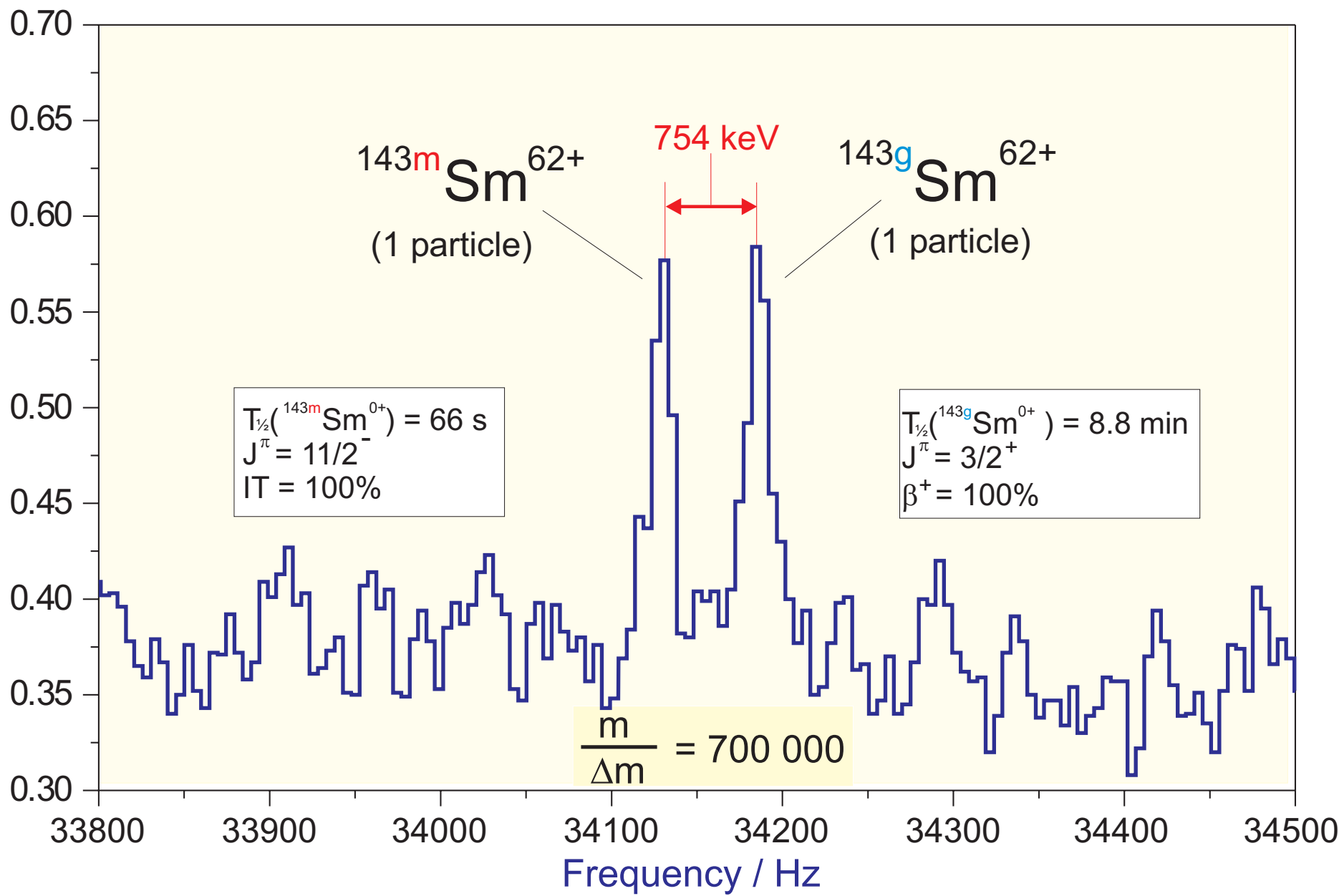
$$\frac{\Delta f}{f} = -\frac{1}{\gamma_t^2} \frac{\Delta(m/q)}{m/q} + \frac{\Delta v}{v} \left(1 - \frac{\gamma^2}{\gamma_t^2}\right)$$

Intensity / arb. units



Schottky Spectra of Ground and Isomeric State of $^{143}\text{Sm}^{62+}$

Intensity / arb. units

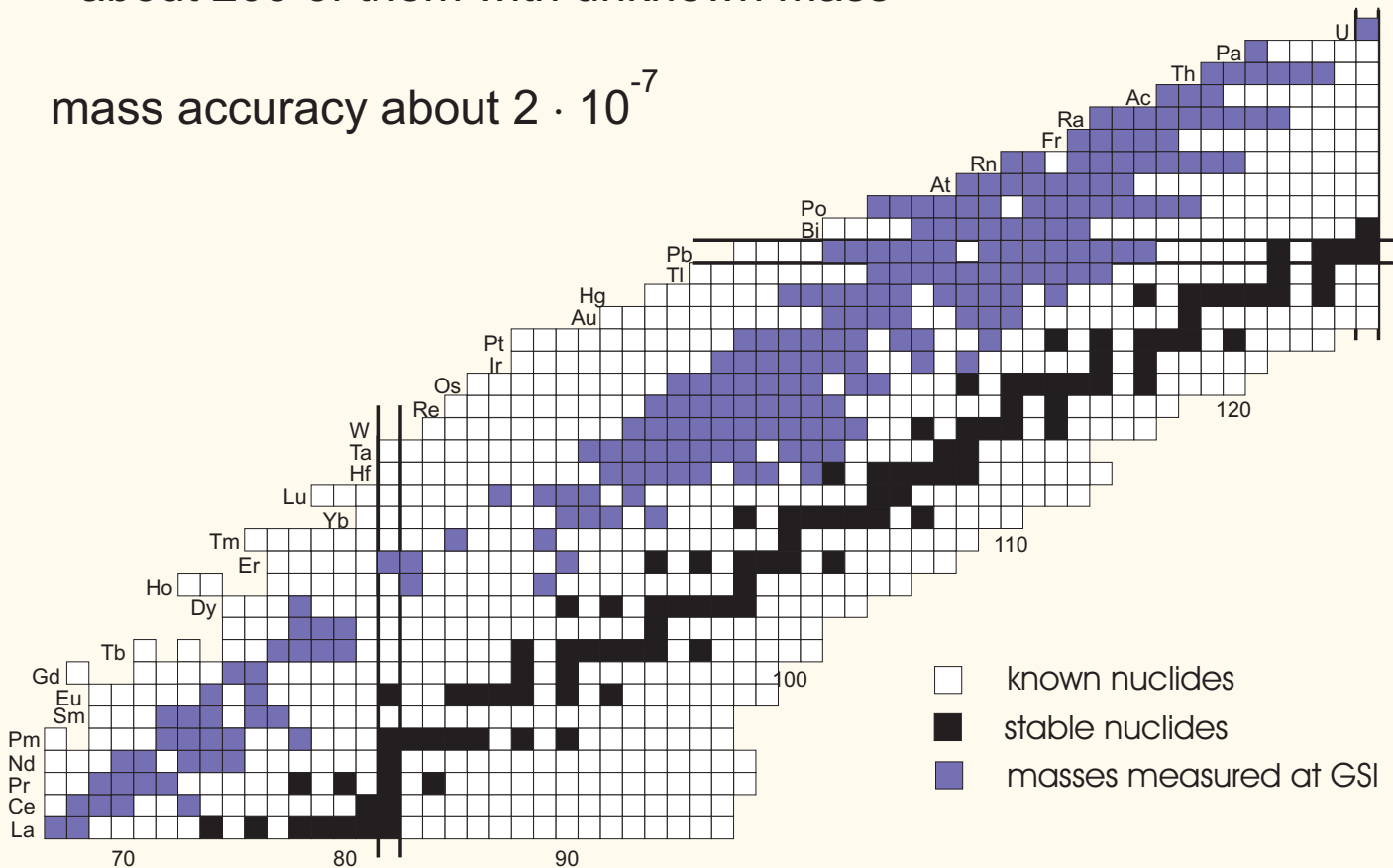


Results of Schottky Mass Spectrometry

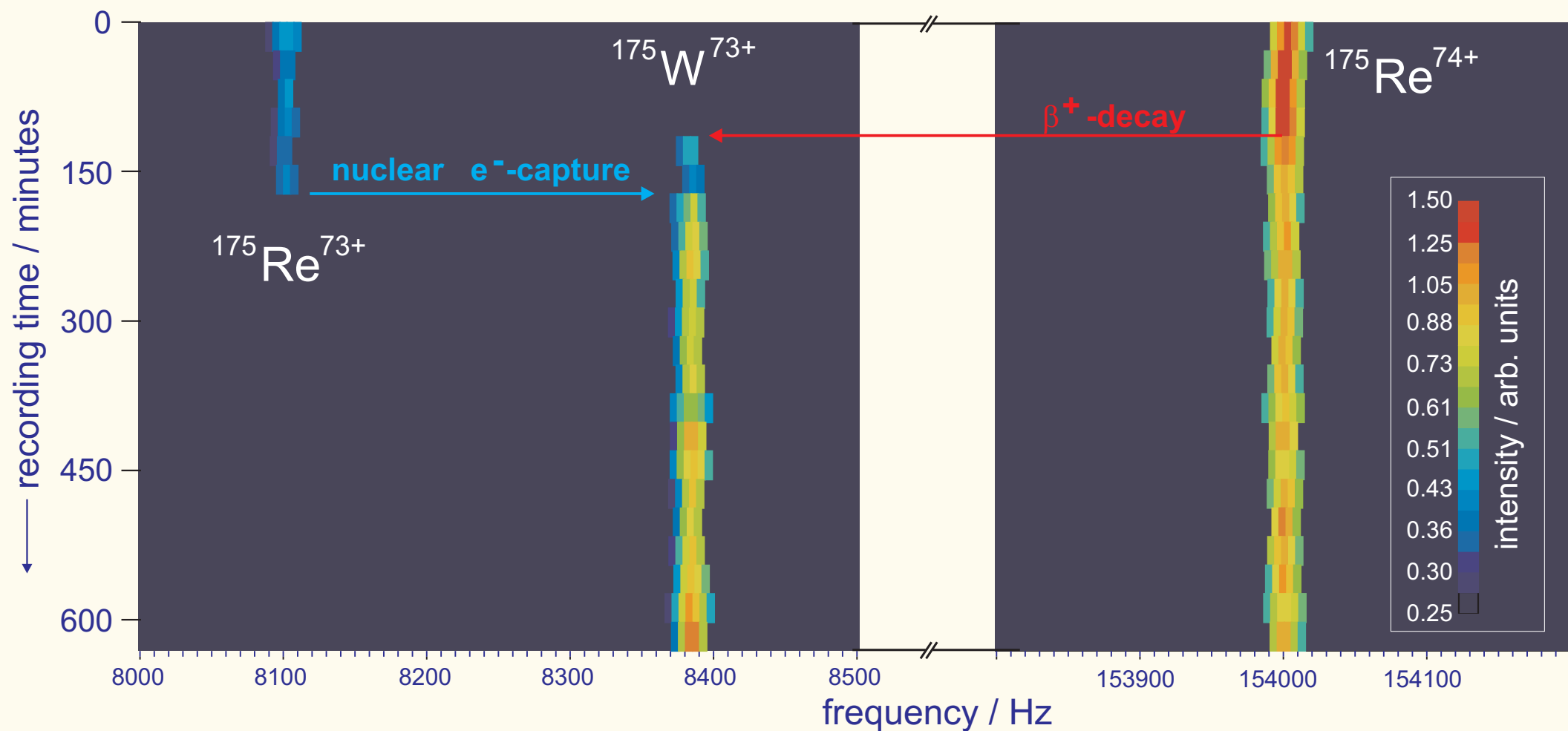
finished:

- 194000 peaks identified
- 500 different nuclei
- about 200 of them with unknown mass

mass accuracy about $2 \cdot 10^{-7}$



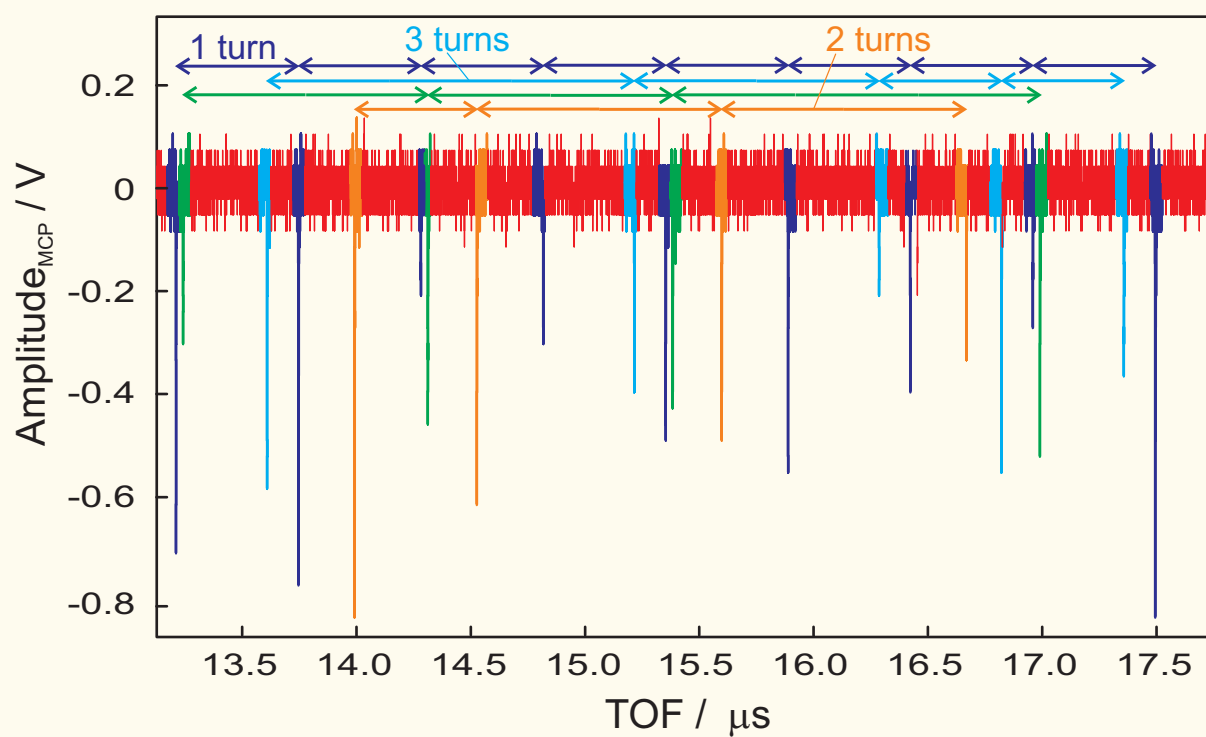
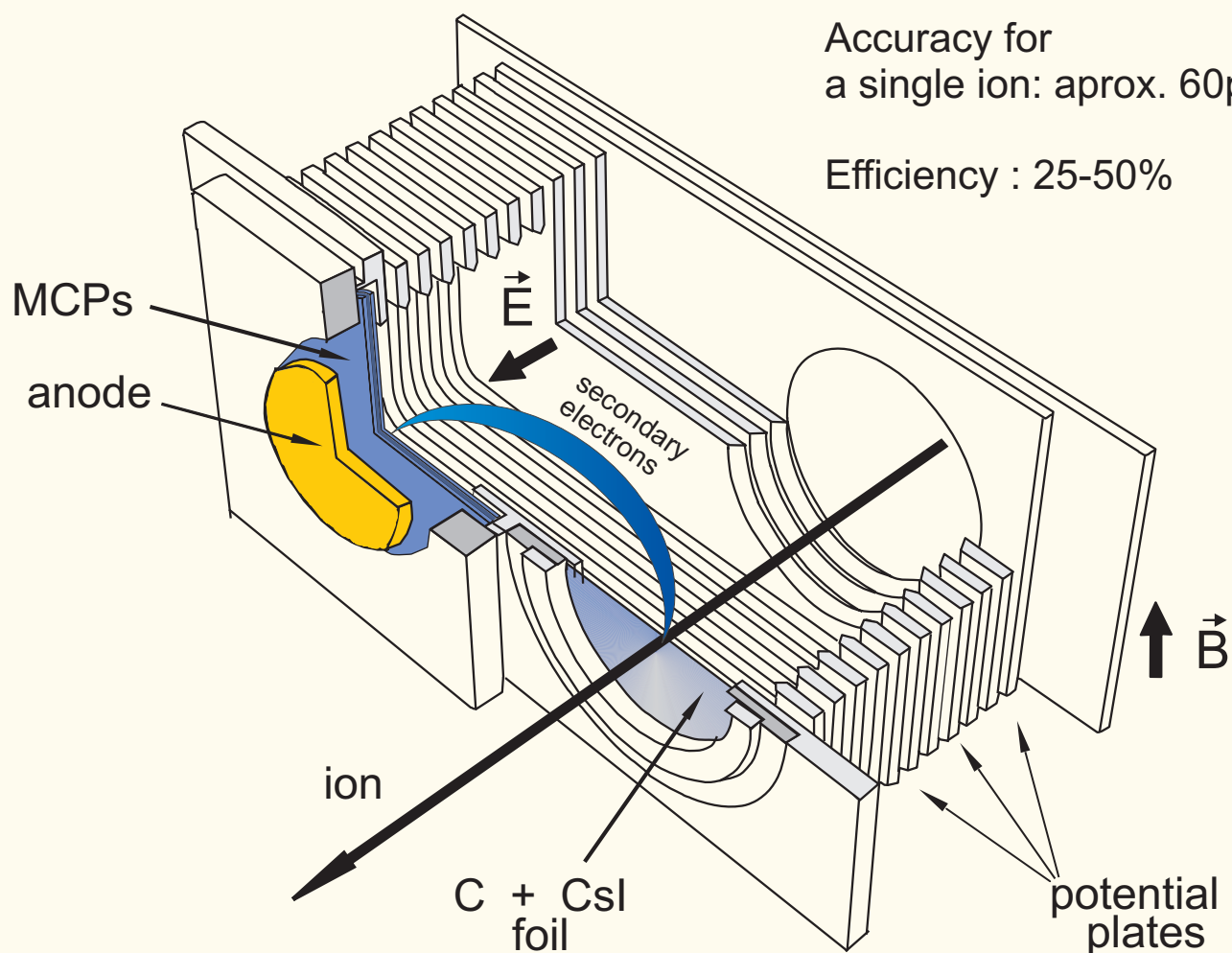
Tracing of single particles in the ESR



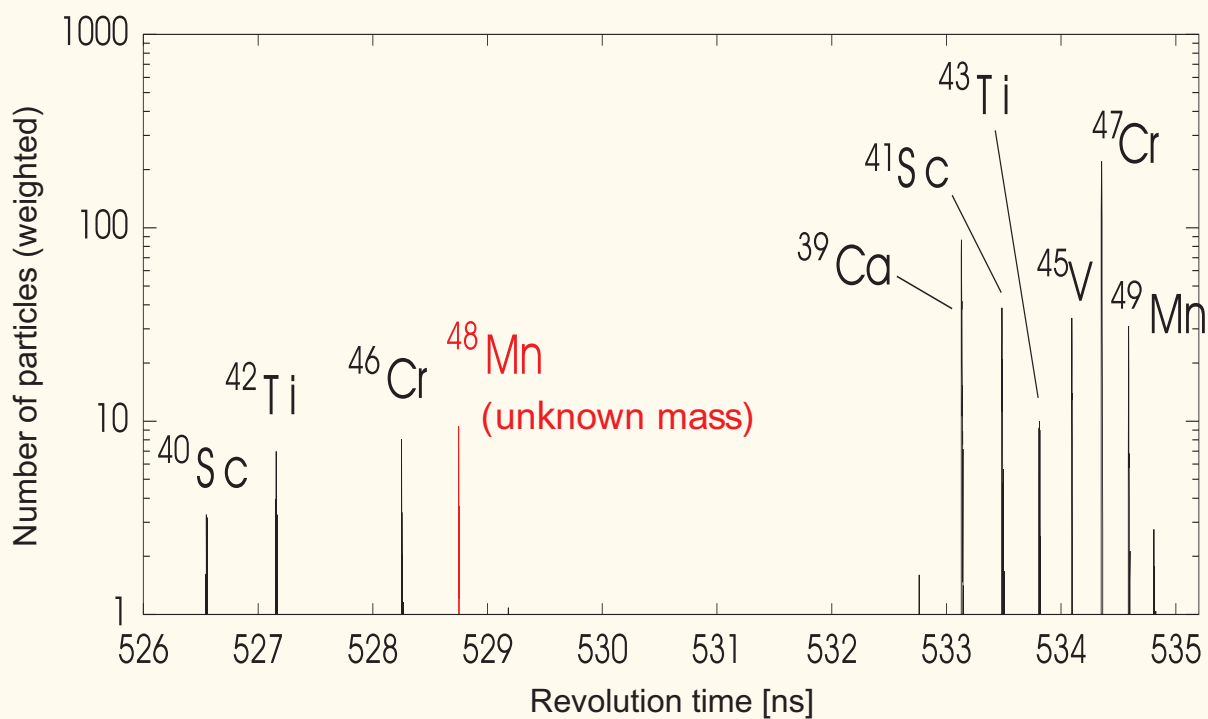
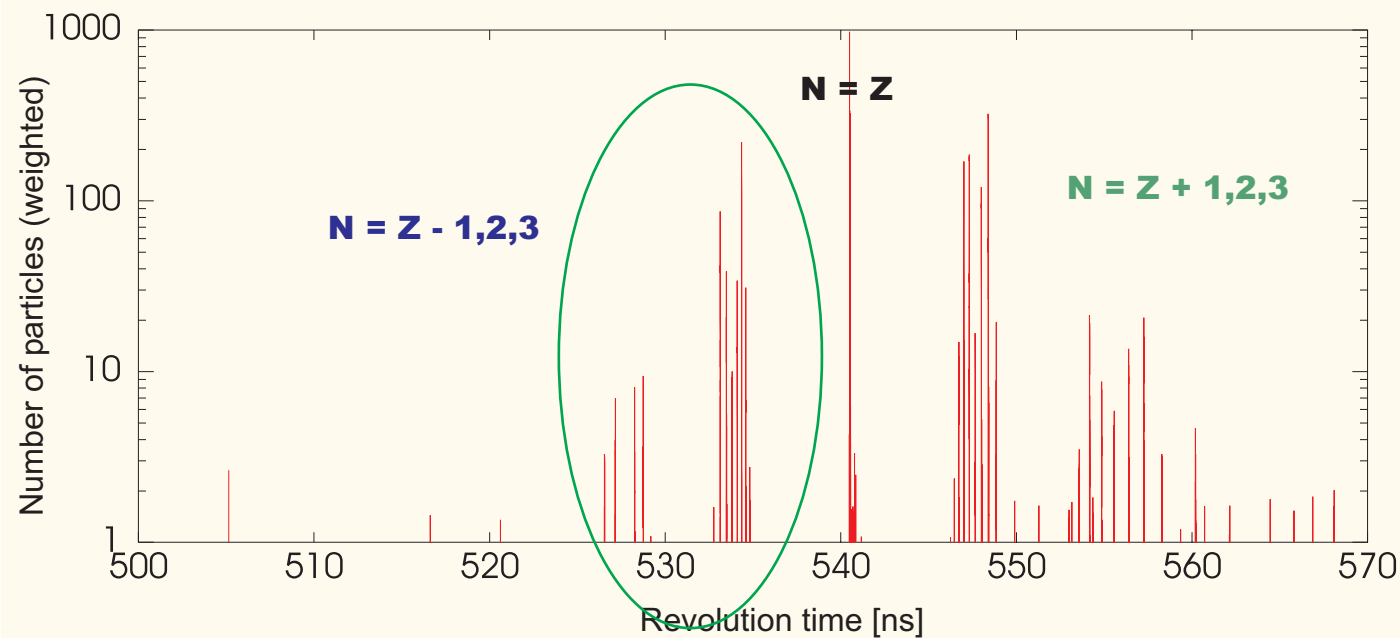
TOF-Detector

Accuracy for
a single ion: aprox. 60ps

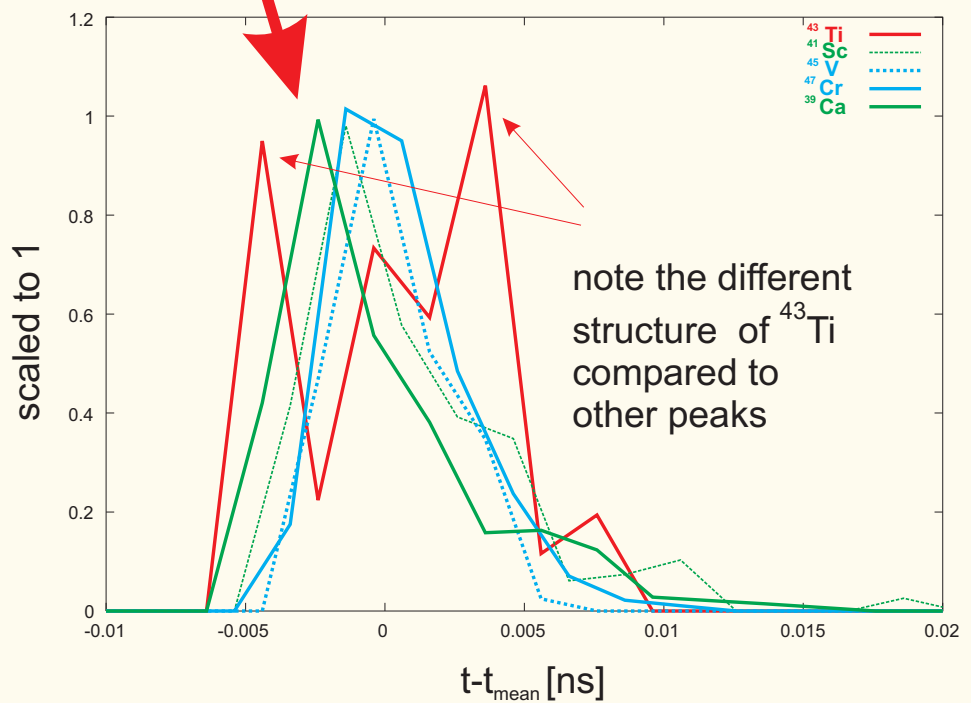
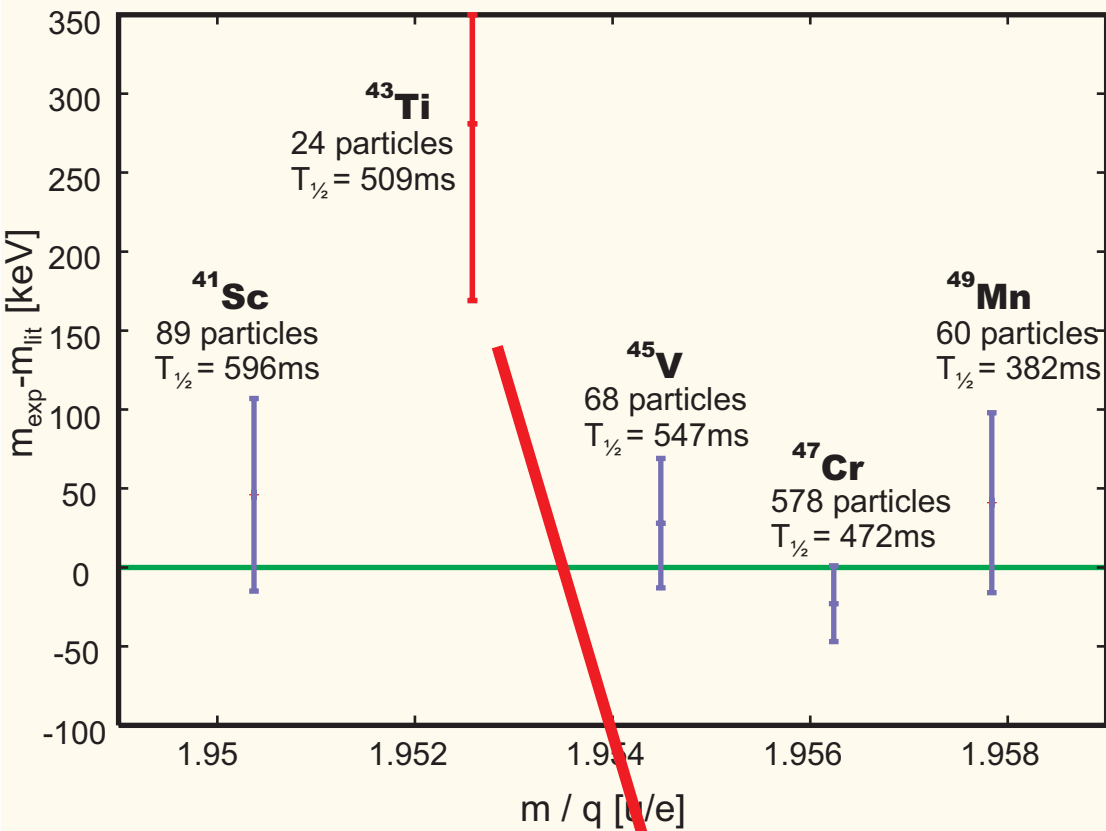
Efficiency : 25-50%



Spectrum of ^{48}Mn cut

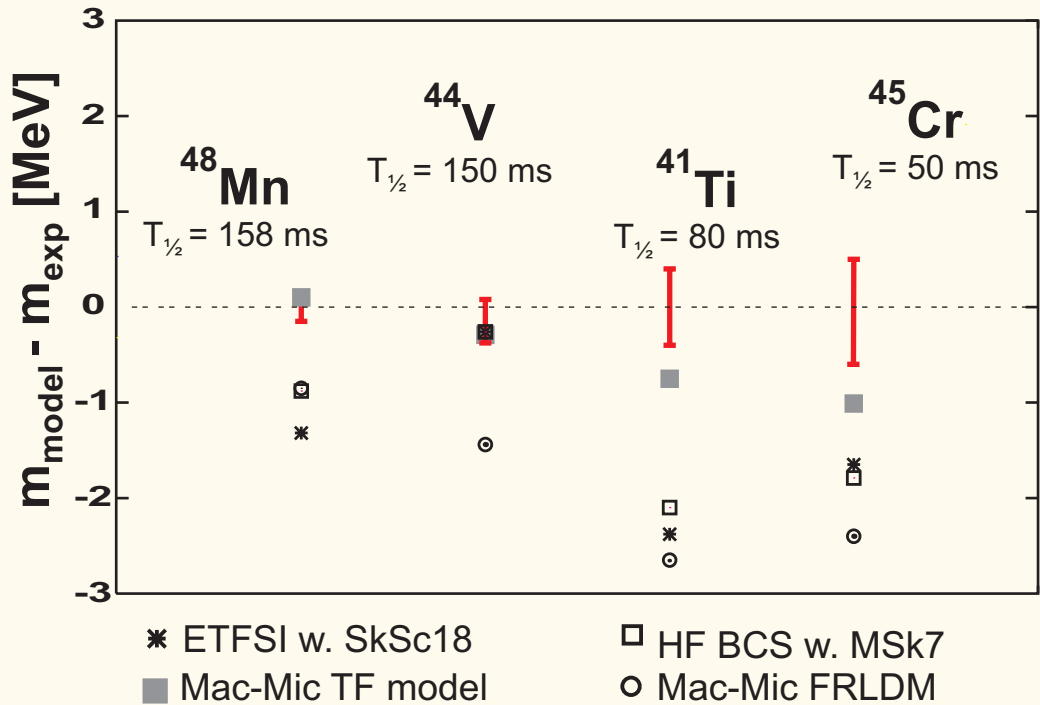


Test of the method and hint for a short lived isomer

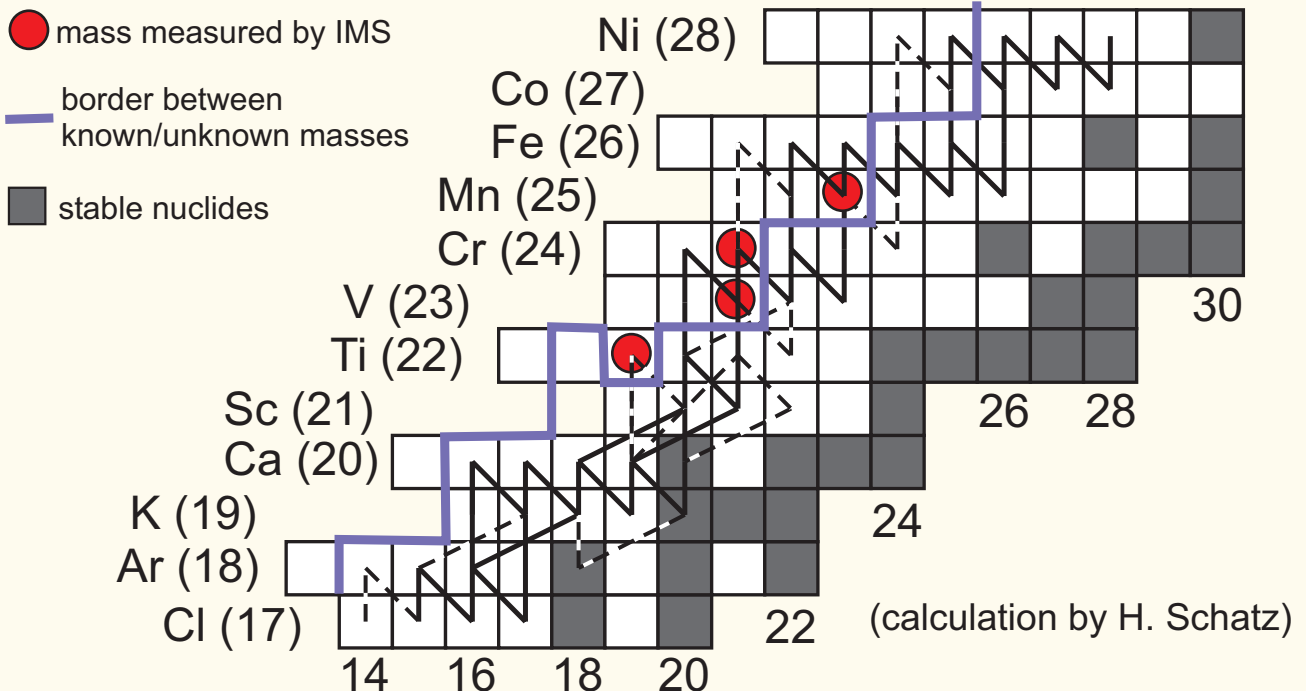


Results of Isochronous Mass Measurements

Comparison of measured masses with models



The newly measured masses in the RP-process



Areas of Mass Measurements in the ESR

