GANDALPH @ CRIS

S. Rothe on behalf of
CRIS collaboration

ISCC 2018
The ionization potential of astatine

IP (At) = 9.31751(8) eV
The electron affinity of astatine

- No experimental value for EA(At) yet
- Scattering of all theoretical predictions and extrapolations ~1 eV
Successful stable iodine detachment in 2015

Laser photodetachment of radioactive $^{128}$I in 2016
The Method: Collinear laser photodetachment

negative ion beam

negative ions
neutral atoms

photo-electrons
secondary electrons

collimators
deflector

neutral atom detection (FC)

(anti) collinear tunable laser beam

coated glass plate electron multiplier

GANDALPHE

Gothenburg AN ion Detector for Affinity measurements by Laser PHotodetachment

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David Leimbach
Future of GANDALPH

- GANDALPH@GLM requires negative ions from ISOLDE target.
- Limits available beams mostly to halogens and chalcogens.
- Polonium unlikely to obtain from MK4
- Double charge exchange

\[ X^+ \rightarrow X^+, X, X^- \]

(CRIS) Charge exchange cell

Proposal: Platform above CRIS

Disclaimer: Very preliminary drawing to highlight concept.
Motivation

• Create required space to integrate Gandalph and CRIS.
• Allow HV services and power to better organized and more accessible (improved safety)
• Address laser stability and safety considerations.
• Address current safety issues associated with ladder access to gangway above COLLAPS and CRIS.
• Increase experimental space in hall
Approach

• Design will require consultation with fixed experiments in the hall so that this doesn’t negatively effect their operation.
• Consideration for crane access, vibrational stability and impact.
• Design effort followed by cost estimation and funding requests.
• Installation during the second half of LS2