Coulomb excitation around ^{208}Pb; Towards HISPEC

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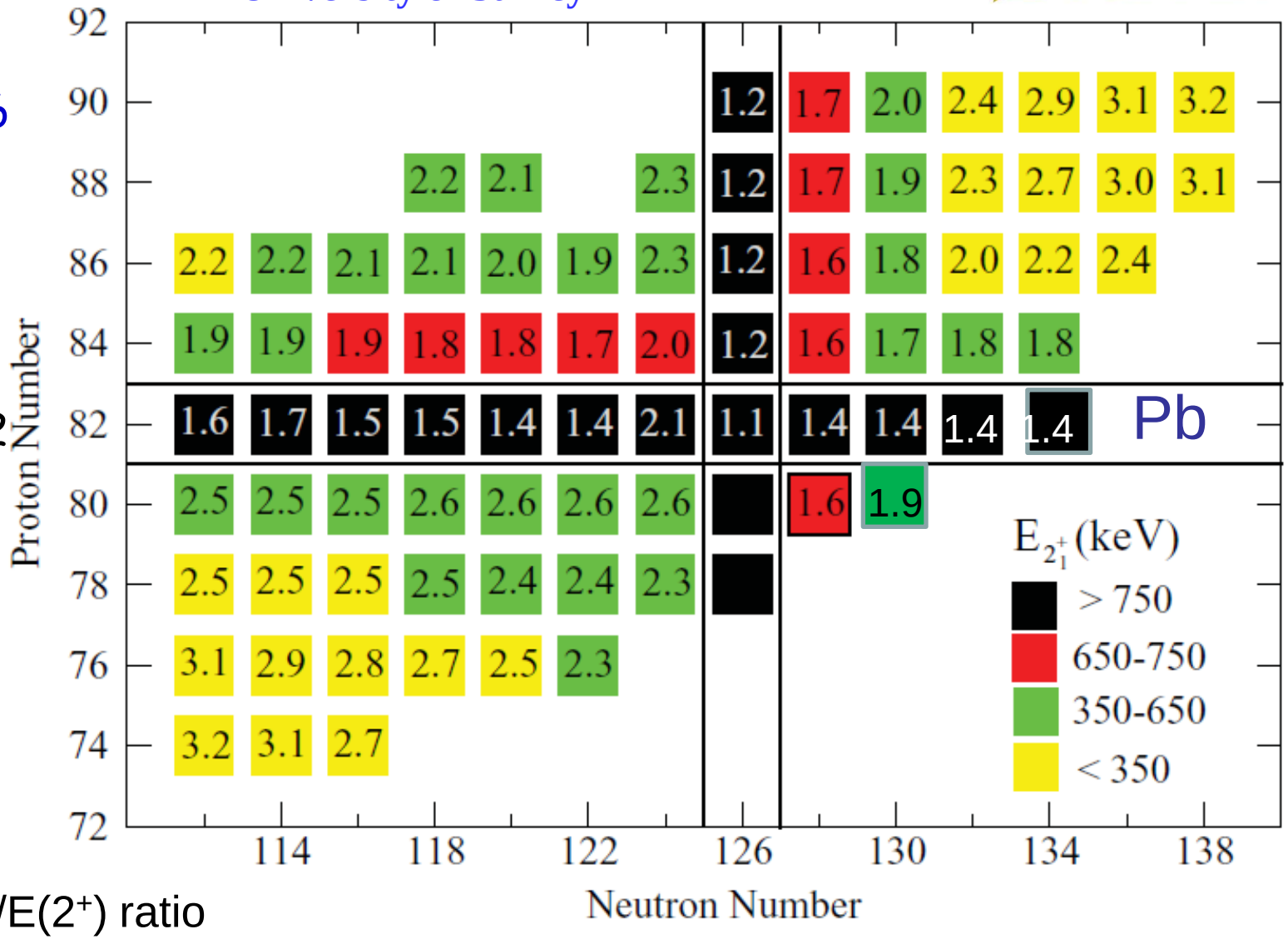
π	ν
f7/2	j15/2
i13/2	i11/2
h9/2	g9/2
Z=82	N=126
s1/2	p1/2
d3/2	f5/2
h11/2	p3/2
d5/2	i13/2



In box: $E(4^+)/E(2^+)$ ratio

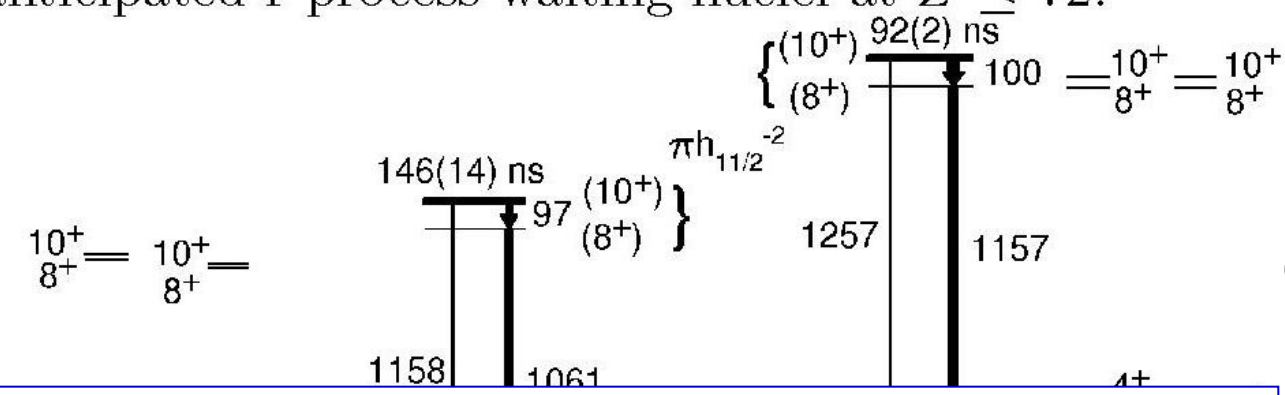


TABLE I: Transition strengths for experiment, the Rydström [24] shell model (SM) and the new TBMEs (SM_{mod}), see text, in ^{204}Pt. Effective charges of 1.5 and 2.0 e for $E2$ and $E3$, respectively were assumed, which were chosen to reproduce the ^{206}Hg $10^+ \rightarrow 8^+$ $E2$ and $10^+ \rightarrow 7^-$ $E3$ transitions [9].

Transition	EL	$B(EL)$ (W.u.)		
		exp.	SM	SM_{mod}
$10^+ \rightarrow 8^+$	$E2$	0.80(8)	2.64	1.22
$10^+ \rightarrow 7^-$	$E3$	0.19(3)	0.21	0.22
$7^- \rightarrow 5^-$	$E2$	$0.017 \rightarrow 0.0034^a$	1.21	0.0037
$5^- \rightarrow 2^+$	$E3$	0.039(5)	0.713	0.612

^{a} *Assuming a transition energy between 10 → 78 keV*

Shell-model calculations (M.Górska, H.Grawe, H. Maier, A.Brown)

(a)and (d): TBME from L.Rydstrom et al, NPA512(1990)217 (based on Kuo-Brown interaction)

(b) and (c): three TBMEs modified

$\Delta(d_{3/2}\ h_{11/2};\ d_{3/2}\ h_{11/2})_{7-}$ = +135 keV

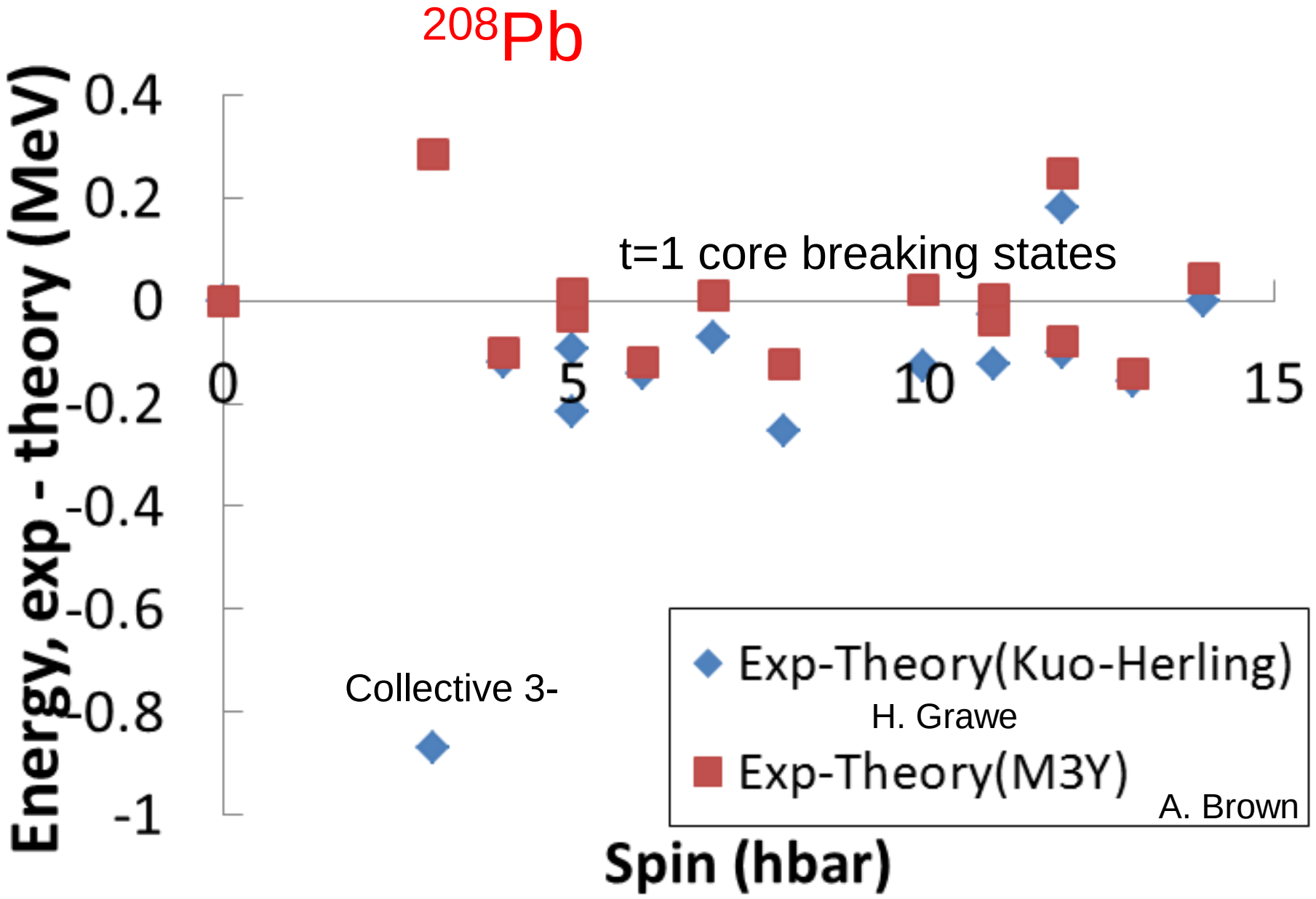
$\Delta(s_{1/2}\ d_{5/2};\ s_{1/2}\ d_{5/2})_{2+,3+}$ =+230 keV (monopole only)

$\Delta(d_{3/2}\ h_{11/2};\ s_{1/2}\ h_{11/2})_{6-}$ changed to +0.160 MeV (fit for B(E2)

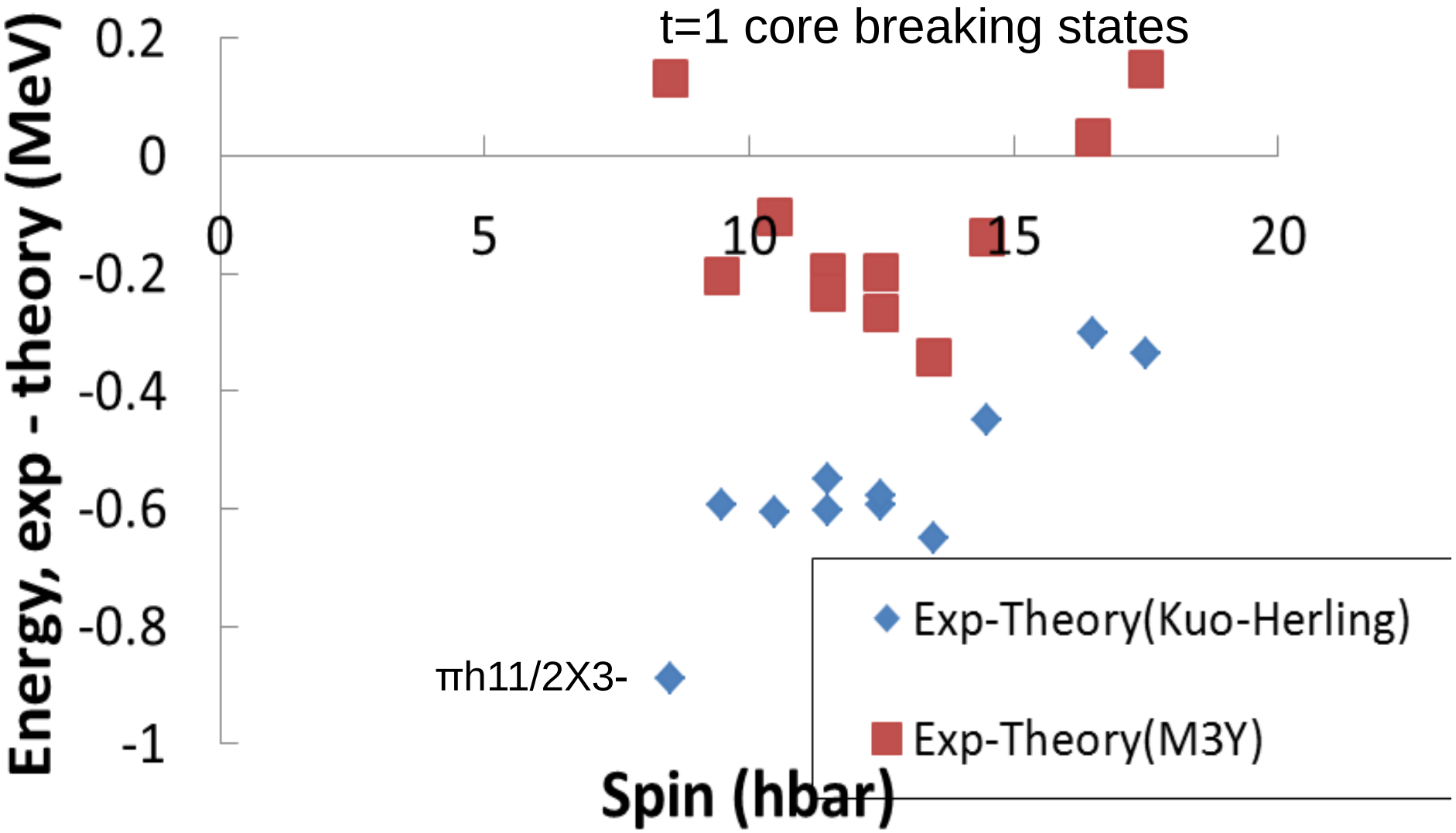
Good description of energies and B(EL)s

S.Steer et al., Phys. Rev C78 (2008) 061302(R)

Collectivity in 208Pb

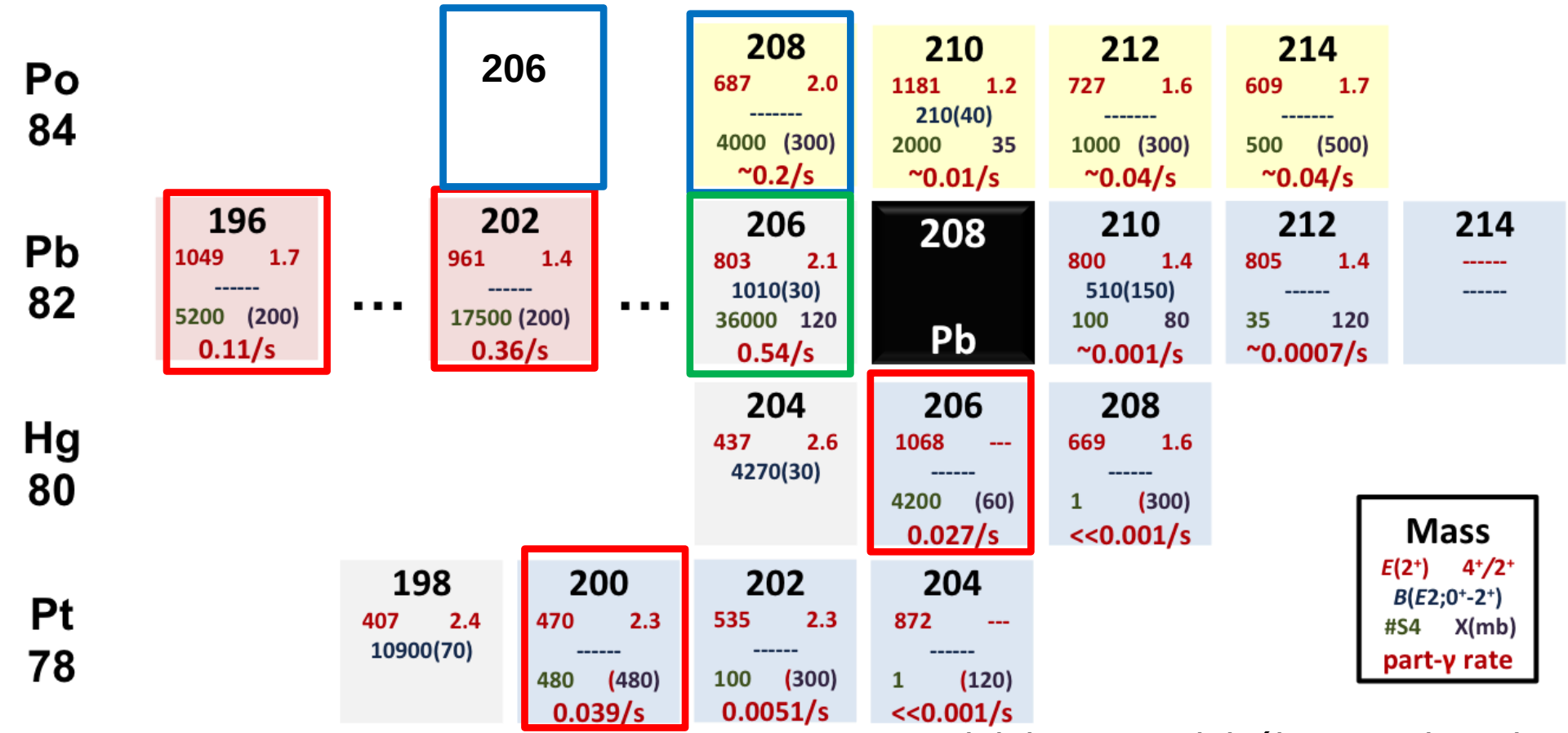


^{207}Tl



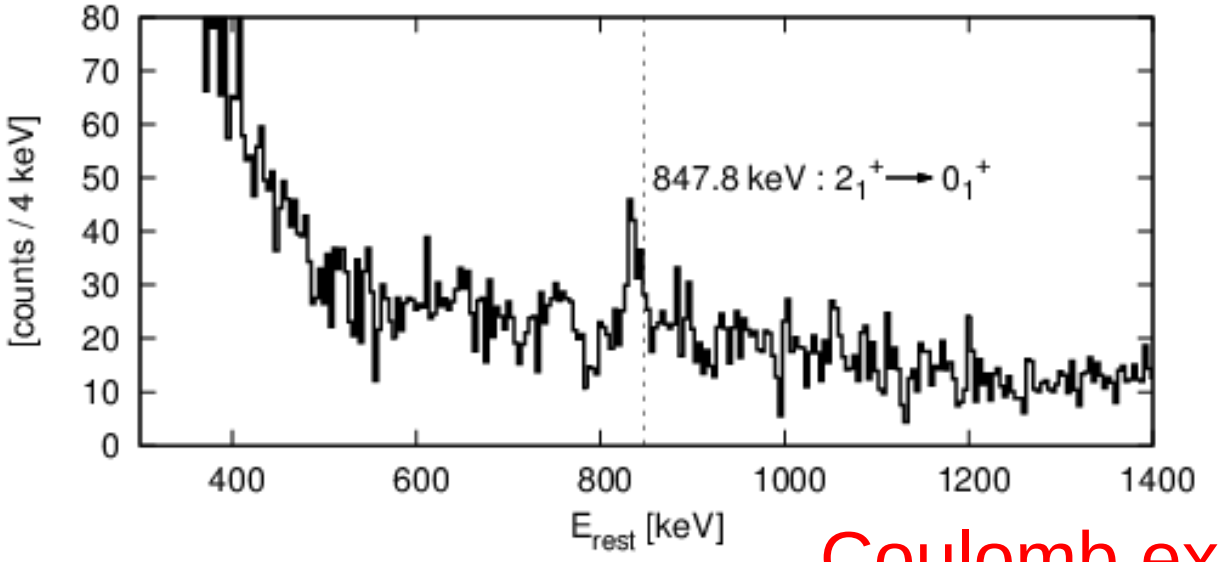
207Tl exp: E. Wilson et al, to be published

$B(E2;0^+ \rightarrow 2^+)$ transition strengths in the vicinity of ^{208}Pb

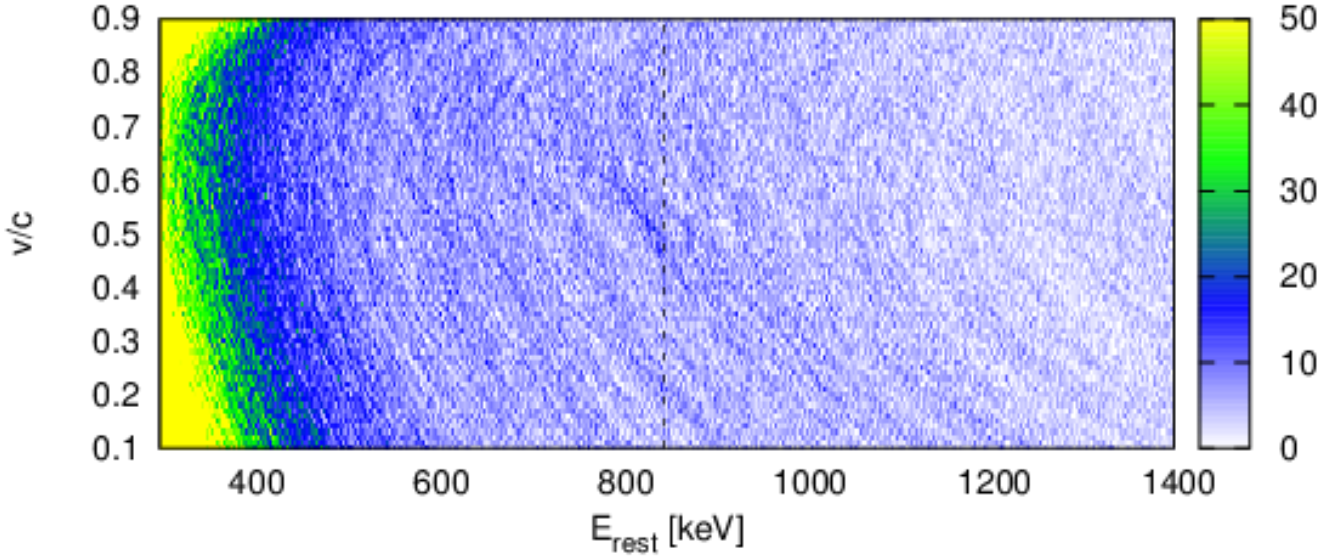


D. Rudolph, Zs. Podolyák, J. Gerl *et al*.

Experiment in 2014



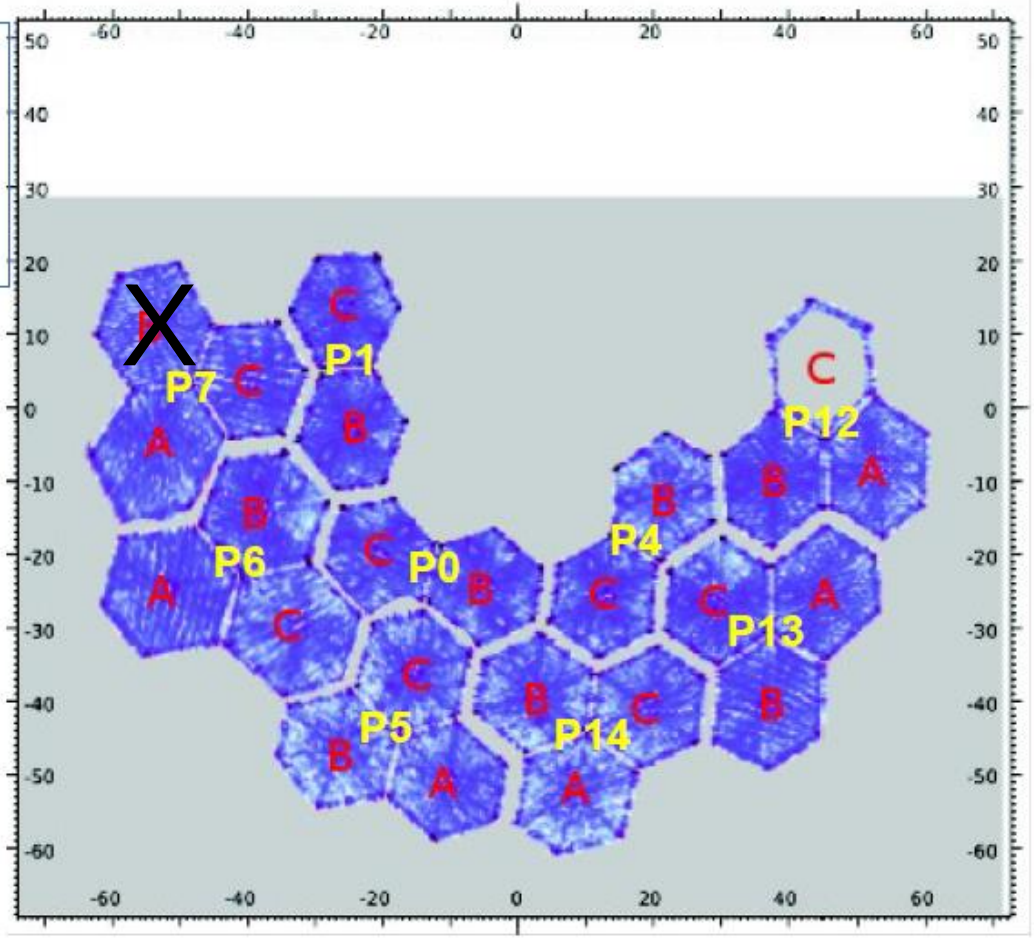
Coulomb excitation of ^{56}Fe



Analysis M. Reese

AGATA detector layout – Status 13-3-2014

Notes:
23 crystals
10 cry - beam R
12 cry - beam L



ADC01: B008, C006
ADC02: B012, C010
ADC03: B011, C008

ATC01: A008, B001, C003

ATC02: A003, B003, C005

ATC03: A002, B010, C001

ATC04: A007, B007, C007

ATC05: A004, B002, C004

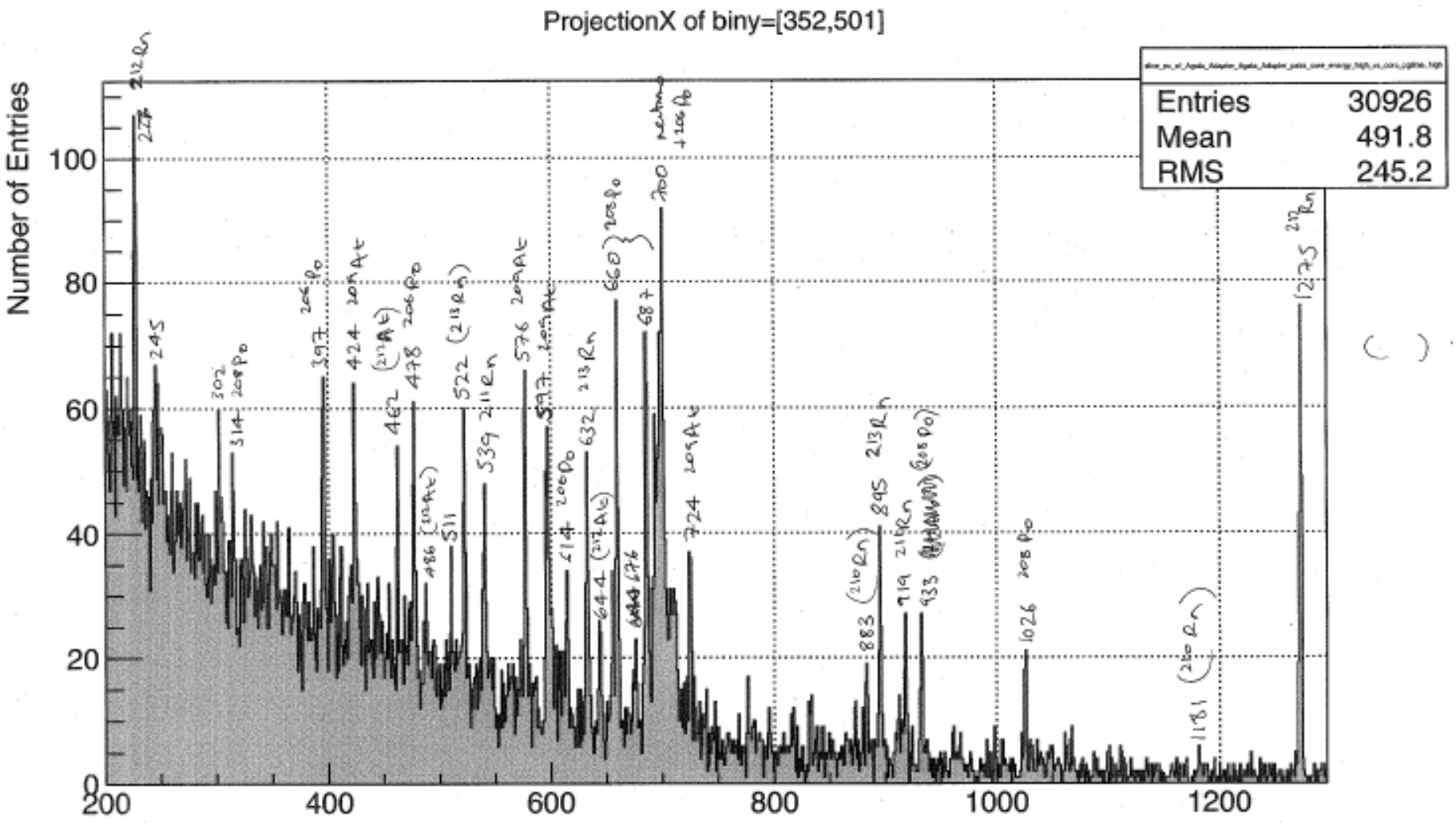
ATC06: A001, B004

P0 - ADC02
P1 - ADC03
P4 - ADC01

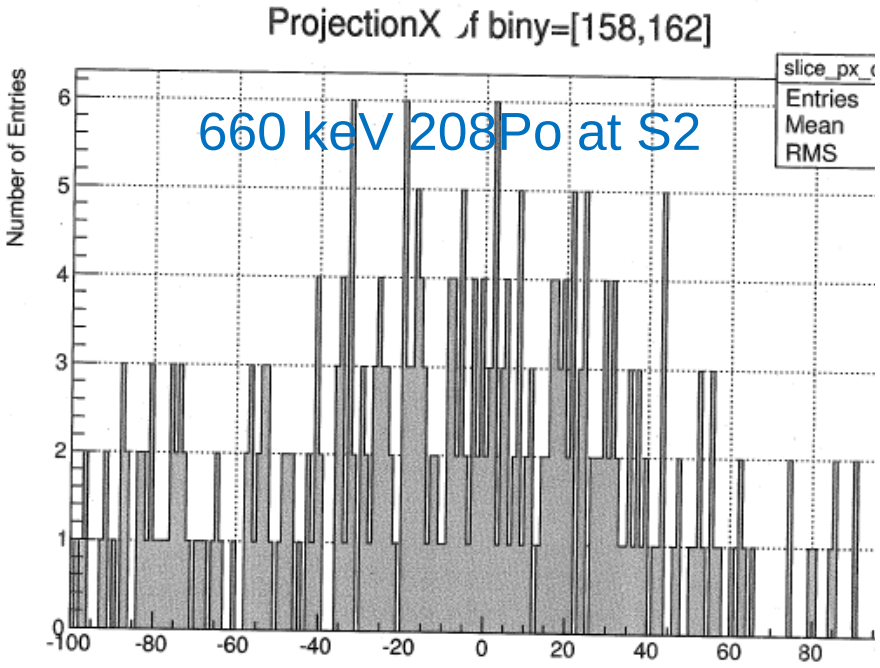
P12 – ATC06 (new mech. Adj.)
P13 – ATC03
P14 – ATC04 (new A007, B007, C007)

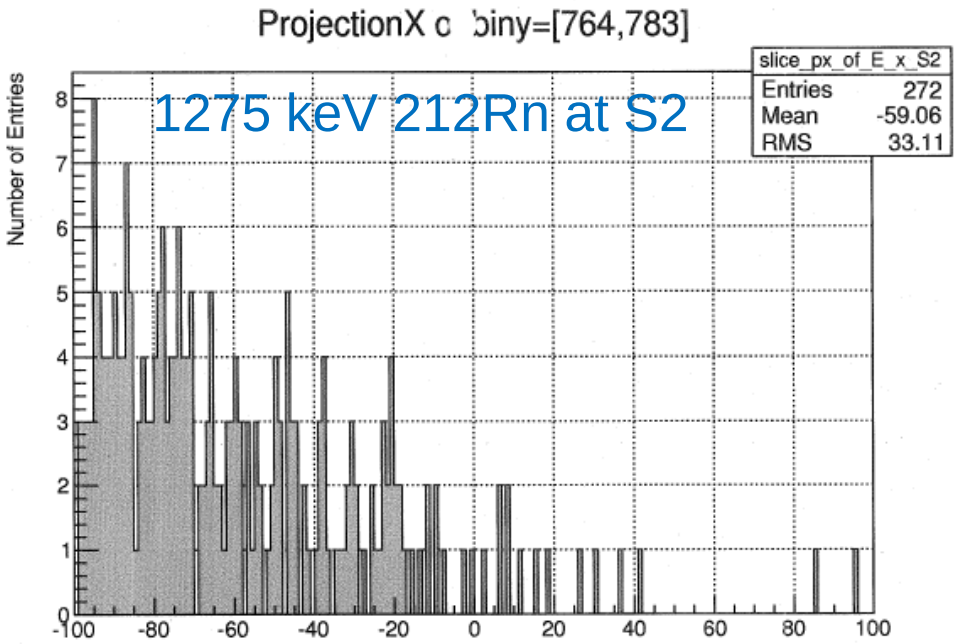
P5 – ATC05
P6 – ATC01 (new mech. Adj.)
P7 – ATC02

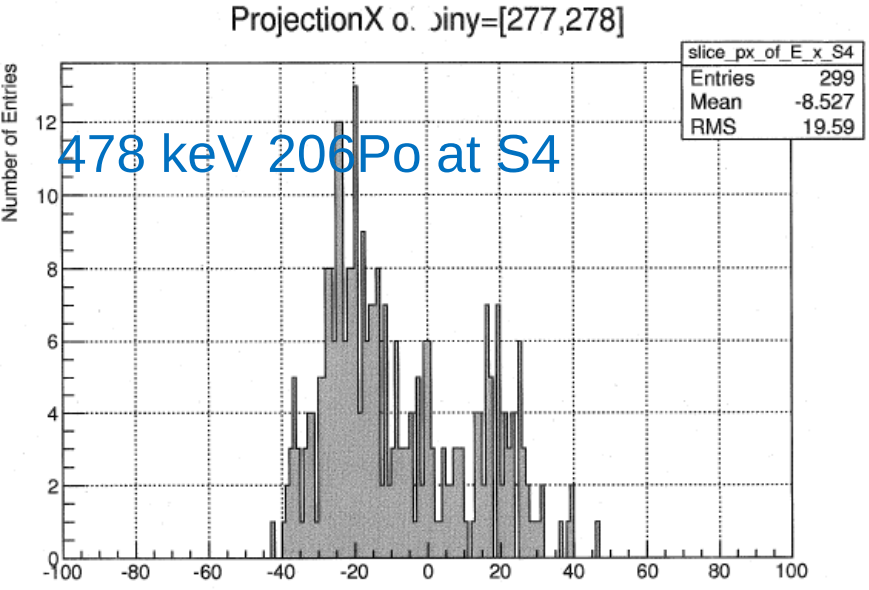
208Po (isomer) setting



Centring 208Po at S2 and S4







1275 keV

212Rn

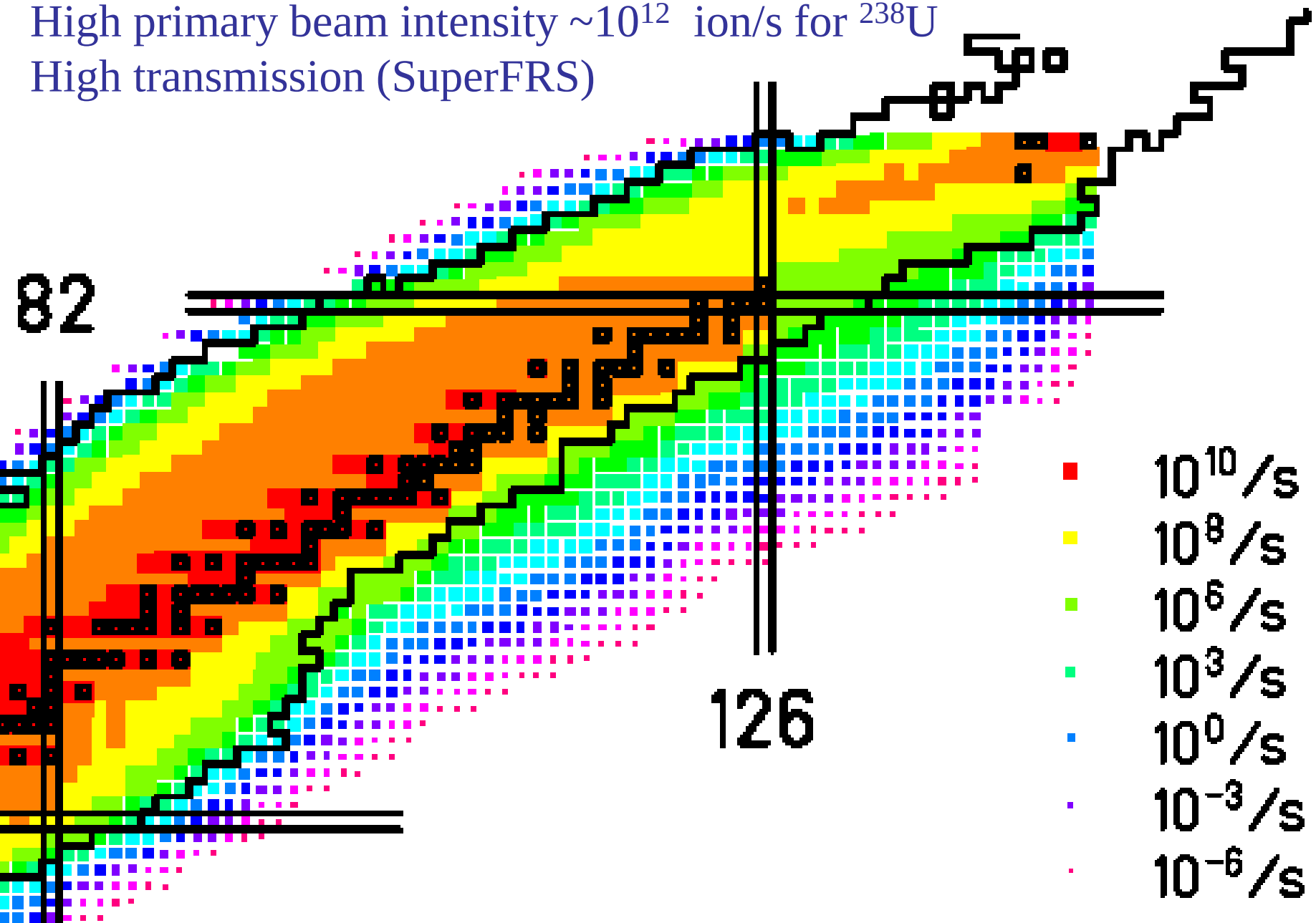
S2_X

Measured position distribution compared with simulations

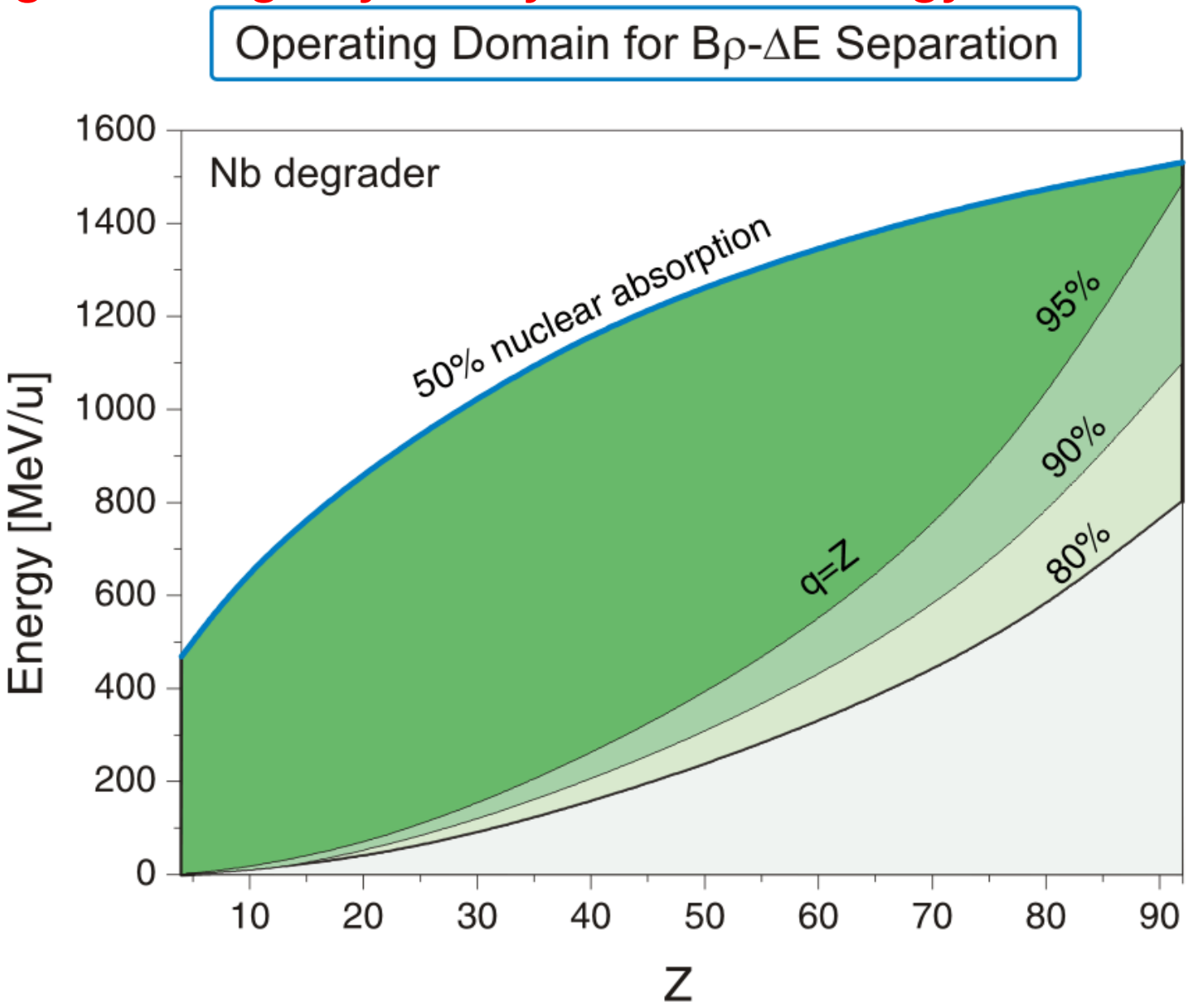
Production yields at FAIR:

High primary beam intensity ~10^{12} ion/s for ^{238}U

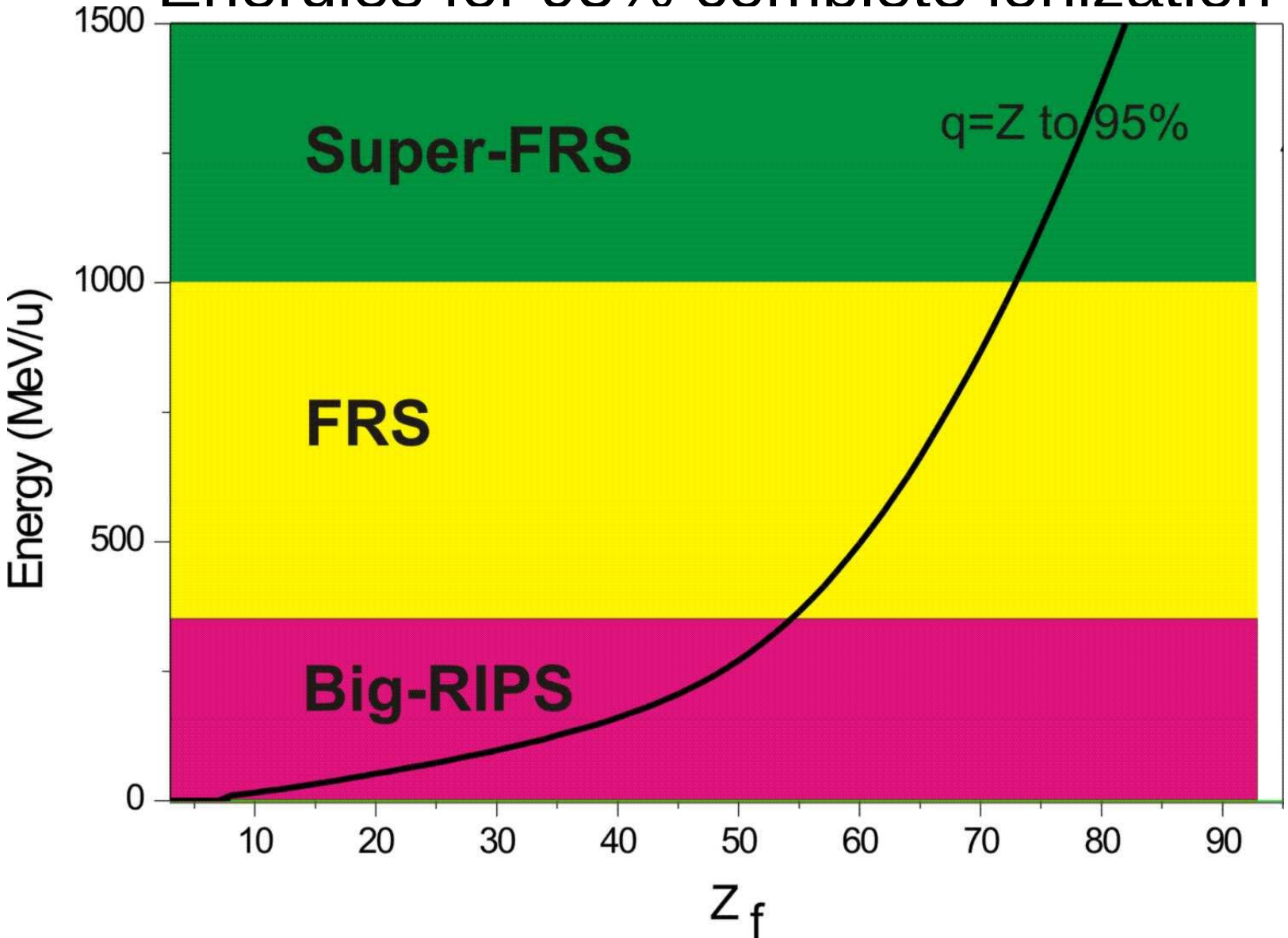
High transmission (SuperFRS)



In-Flight Fragment Separation via Magnetic Rigidity Analysis and Energy Loss in Matter

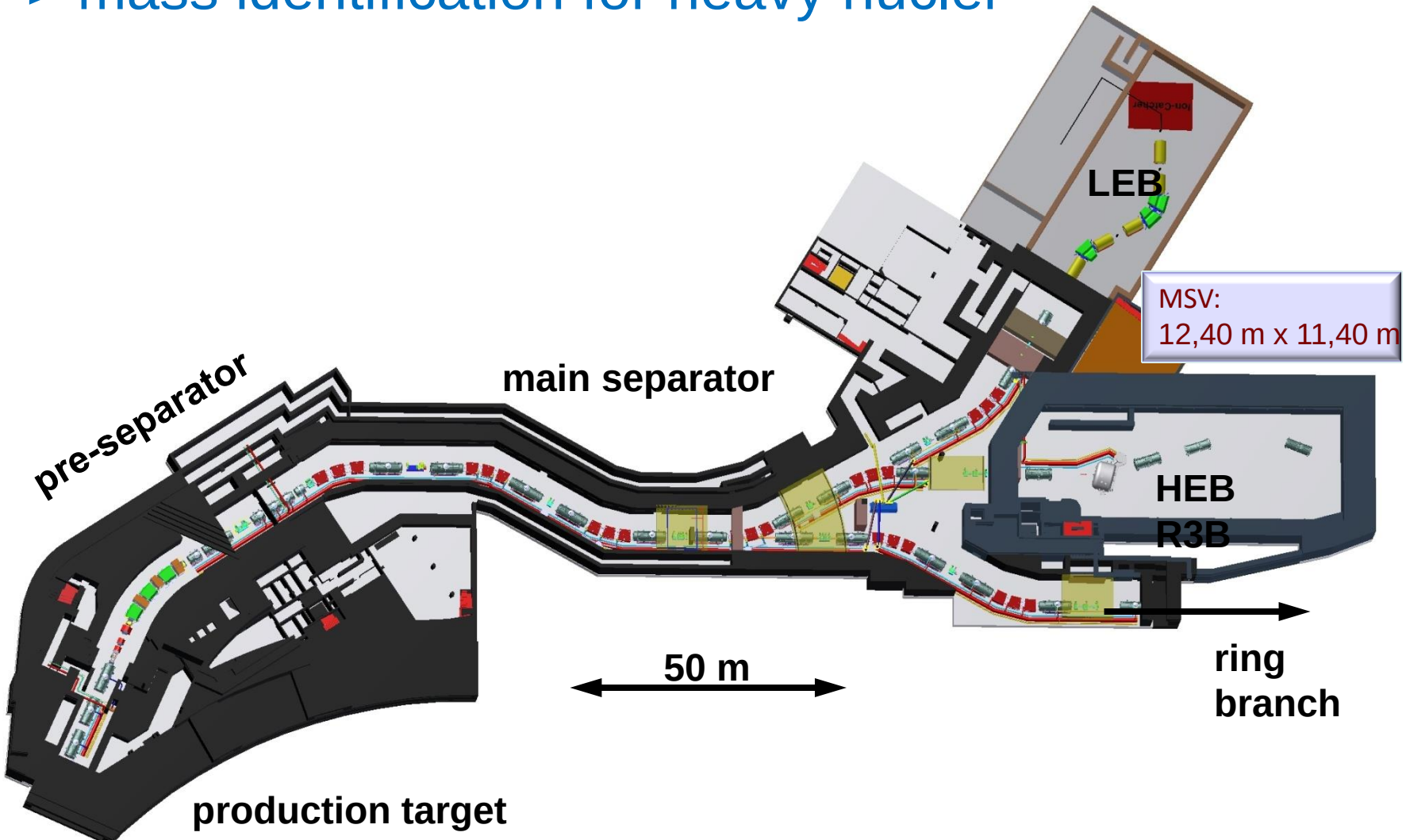


Maximum Energies for ^{238}U Projectiles
Energies for 95% complete ionization



HISPEC/DESPEC at FAIR

Magnetic spectrometer
=> mass identification for heavy nuclei



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AGATA/PRESPEC