

# JLab Hypernuclear Meeting

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GRADUATE  
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# $e'$ rate estimation (HRS-HKS @Hall A)

表 3.5 前回実験における散乱電子の計数率の見積もりと実測値の比較。 $N_{e'}(\text{exp})$  は実測値 [13]、 $N_{e'}(\text{sim})$  は見積もった値を表している。

target	thickness [mg/cm <sup>2</sup> ]	beam current [ $\mu\text{A}$ ]	$N_{e'}(\text{exp})$ [MHz]	$N_{e'}(\text{sim})$ [MHz]	$\frac{N_{e'}(\text{sim})}{N_{e'}(\text{exp})}$
<sup>7</sup> Li	208.0	31.6	2.2	2.8	1.3
<sup>9</sup> Be	188.0	37.9	2.5	3.8	1.5
<sup>10</sup> B	56.1	38.2	1.6	1.6	1.0
<sup>12</sup> C	87.5	19.3	1.5	1.5	1.0
			2.3	2.8	1.2
<sup>52</sup> Cr	134	7.3	2.5	2.8	1.1

Collimator pos.  
was different →

2.5  
3.7  
1.7 } Not bad

Scaled by

- Target thickness
- Beam current
- $Z^2$

Katayama, Master's thesis (Japanese):

[https://wiki.jlab.org/tegwiki/images/6/69/Katayama\\_Master\\_Kyoto-Univ\\_20210312.pdf](https://wiki.jlab.org/tegwiki/images/6/69/Katayama_Master_Kyoto-Univ_20210312.pdf)

# Previously.... Sorry.

There are mistakes in the last rate estimations:

[https://wiki.jlab.org/tegwiki/images/2/2c/JLabMeeting\\_20211007\\_gogami.pdf](https://wiki.jlab.org/tegwiki/images/2/2c/JLabMeeting_20211007_gogami.pdf)

- Mass number (# of target) difference was not properly applied.
- $^{52}\text{Cr}$  is not a good reference because the Collimator set was different from the standard one.

# $e'$ rate estimation (HES-HKS @Hall C)

Target (/ (mg/cm <sup>2</sup> ))	Beam curr. (/uA)	$e'$ rate estimated by the scaling (/MHz)
<sup>3</sup> H (190) + Al <sub>162mg/cm2</sub>	20	0.4 + 6.0
<sup>6</sup> Li (100)		0.9
<sup>12</sup> C (100)		1.8
<sup>40</sup> Ca (100)		5.9
<sup>208</sup> Pb (100)		19.1

# $e'$ rate estimation (HES-HKS @Hall C)

Target (/ (mg/cm <sup>2</sup> ))	Beam curr. (/uA)	$e'$ rate estimated by the scaling (/MHz)
<sup>3</sup> H (190) + Al <sub>162mg/cm2</sub>	20	0.4 + 6.0
<sup>6</sup> Li (100)		0.9
<sup>12</sup> C (100)		1.8
<sup>40</sup> Ca (100)		5.9
<sup>208</sup> Pb (100)		19.1

→ It may be OK with about a half of beam current (10  $\mu$ A) or less  
(I think 1/3 is better  $\sim$  6.5  $\mu$ A in terms of hardware tolerance)