

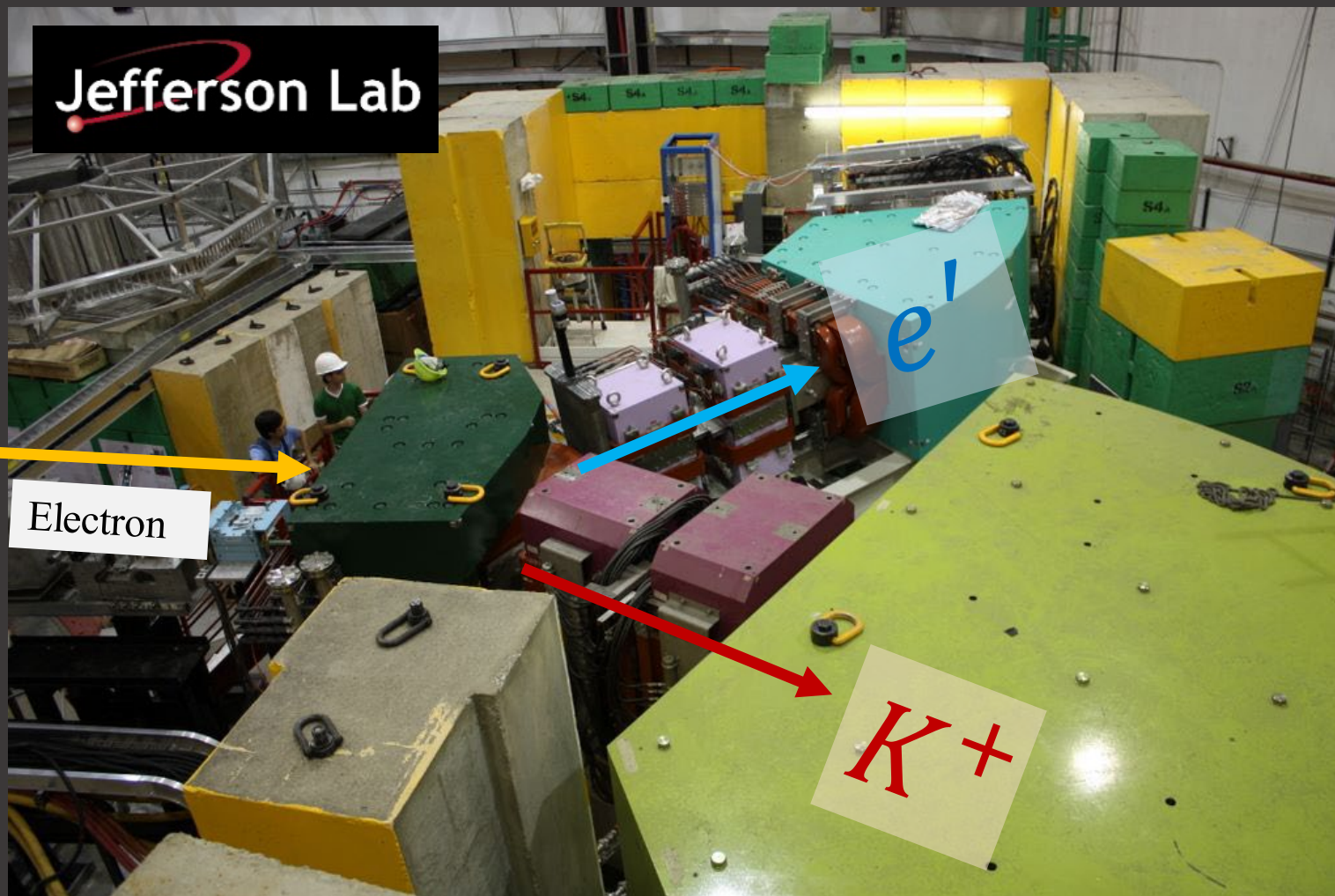
HKS target meeting

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Aiming at ERR in early 2024



Approved: E12-15-008, (E12-19-002), E12-20-013

Proposing next year: LOI12-23-011, LOI12-23-013, LOI12-23-016

Target list (only solid targets) Water cooling?

We focus on only solids targets in the next run

- E12-15-008: ^{40}Ca , ^{48}Ca [150 mg/cm²; a value in the last PAC (PAC51)]
- E12-20-013: ^{208}Pb (100—150 mg/cm²)
- Common calibration: ^{12}C (150 mg/cm²), CH_2 (500 mg/cm²), ^{27}Al (150 mg/cm²)

New LOIs were submitted this year → new proposal next year

- ^6Li , ^9Be , ^{11}B (100 mg/cm²)
- ^{27}Al (100 mg/cm²)
- There may be a special needs for decay pion spectroscopy (LOI12-23-011)

Discussion

- Meeting on Nov 14, 2023
 - To discuss /share what to prepare for ERR
 - <https://indico.jlab.org/event/742/>
 - 13:00—16:00
 - Nue, Teppei (student in Kyoto Univ.), and I will be at JLab
 - Could you give some comments about the target in the meeting?
- Is there anything that I can work with you?
 - ex.) ANSYS
- Document
 - I can prepare overleaf
 - What is a convenient way for you?

Backup

Target list (E12-15-008, shown in PAC51)

Table 6: Updated request of beamtime.

Target (Hyper Nucleus)	Beam current (μA)	Target thickness (mg/cm^2)	Assumed cross section (nb/sr)	Expected yield (/h)	Num. of events	Req. beamtime (hours)	B.G. rate (/MeV/h)	S/N	Comments
CH_2 (Λ, Σ^0)	2	500	1000	8.62	1000	120	0.03	290	Calibration
${}^6\text{Li}$ (${}^6_\Lambda\text{He}$)	50	100	10	—	—	—	—	—	Separate LoI
${}^9\text{Be}$ (${}^9_\Lambda\text{Li}$)	50	100	10	—	—	—	—	—	Separate LoI
${}^{11}\text{B}$ (${}^{11}_\Lambda\text{Be}$)	50	100	30	—	—	—	—	—	Separate LoI
${}^{12}\text{C}$ (${}^{12}_\Lambda\text{B}$)	50	150	90	6.79	1100	168	1.20	5.67	Calibration
${}^{27}\text{Al}$ (${}^{27}_\Lambda\text{Mg}$)	50	150	60 *	1.98	330	168	1.77	1.87	Calibration
Subtotal						456			Calibration
${}^{40}\text{Ca}$ (${}^{40}_\Lambda\text{K}$)	50	150	50	1.13	520	456	2.41	0.47	Physics
${}^{48}\text{Ca}$ (${}^{48}_\Lambda\text{K}$)	50	150	50	0.94	520	552	1.89	0.50	Physics
Subtotal						1008			Physics
Total						1464			

* for $0s^\Lambda$ $9/2^+, 7/2^+$ doublet.

(=61 PAC days)

J-PARC E63

J-PARC E94

JLab LOI12-23-013

- YN scat. exp.
- Femotoscropy

CSB

${}^3\Lambda\text{H}$ lifetime puzzle

$nn\Lambda$ bound puzzle

JLab E12-19-002

JLab LOI12-23-011

Invariant mass spectroscopy by RHI beam @LHC, RHIC, GSI

JLab C12-20-013 (C2)

JLab LOI12-23-016

Many Body effect (Cluster, deformation)

- Space observation
- Graviton wave meas.

Neutron star puzzle

Strangeness	2B	Coupled channel	3B
-1		$\Lambda N - \Sigma N$	
-2		$\Xi N - \Lambda \Lambda$	

J-PARC E70

J-PARC E75

J-PARC E96

JLab E12-15-008

JLab E12-20-013