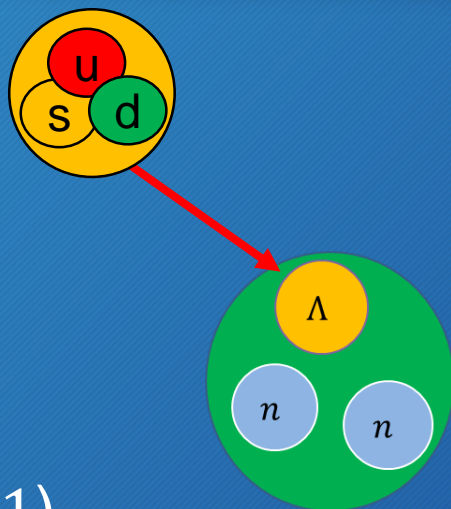


# Study of the three baryon system “ $nn\Lambda$ ” experiment at JLab



## $\Lambda$ particle

- uds quarks
- no charge



$nn\Lambda$  experiment at Jefferson Lab

performed Oct. to Nov. 2018

## $nn\Lambda$

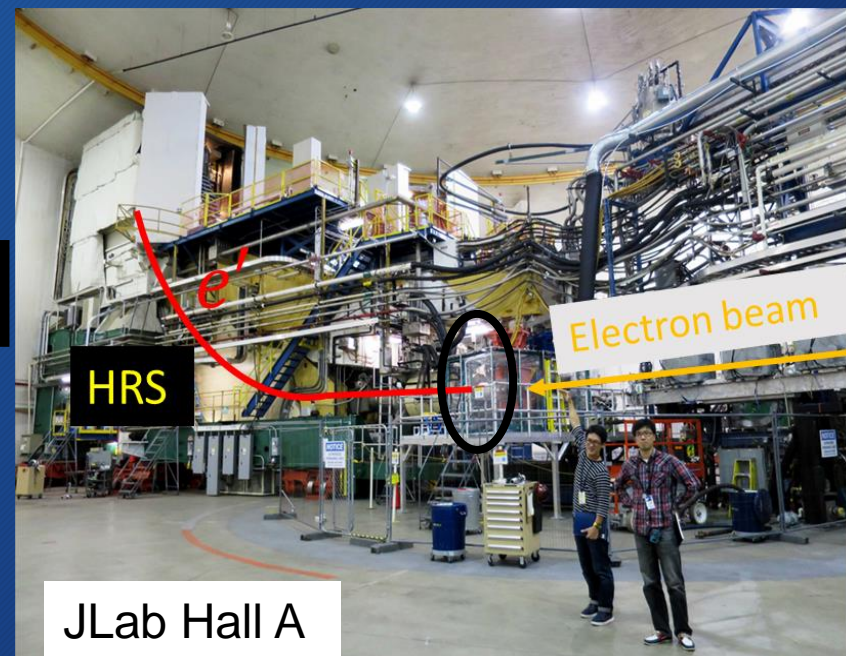
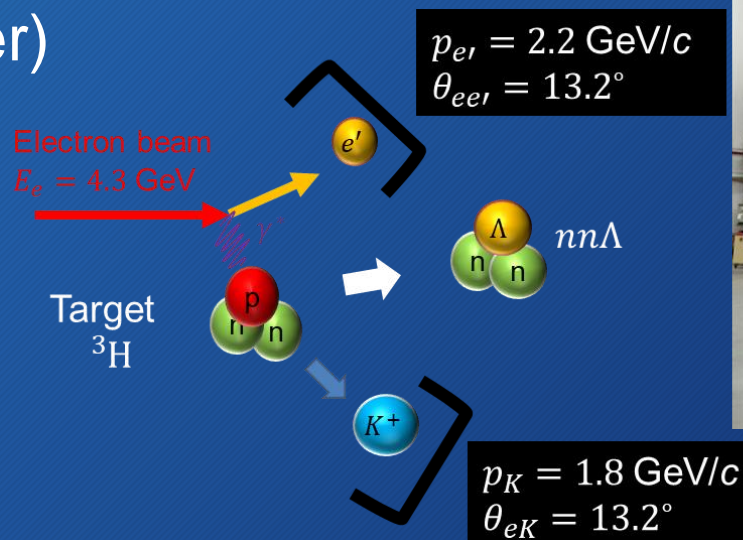
- $nn + \Lambda$  ( $I = 1$ )
- Charge 0 (neutron rich matter)

GSI : Bound state

Theoretical model : unbound or resonance

Investigation of  $nn\Lambda$  state  
→  $\Lambda n$  interaction

$${}^3\text{H}(e, e'K^+)nn\Lambda$$



# Strategy of my analysis

2

## *nn*Λ experiment (performed 2018)

Analysis method (with optics data)

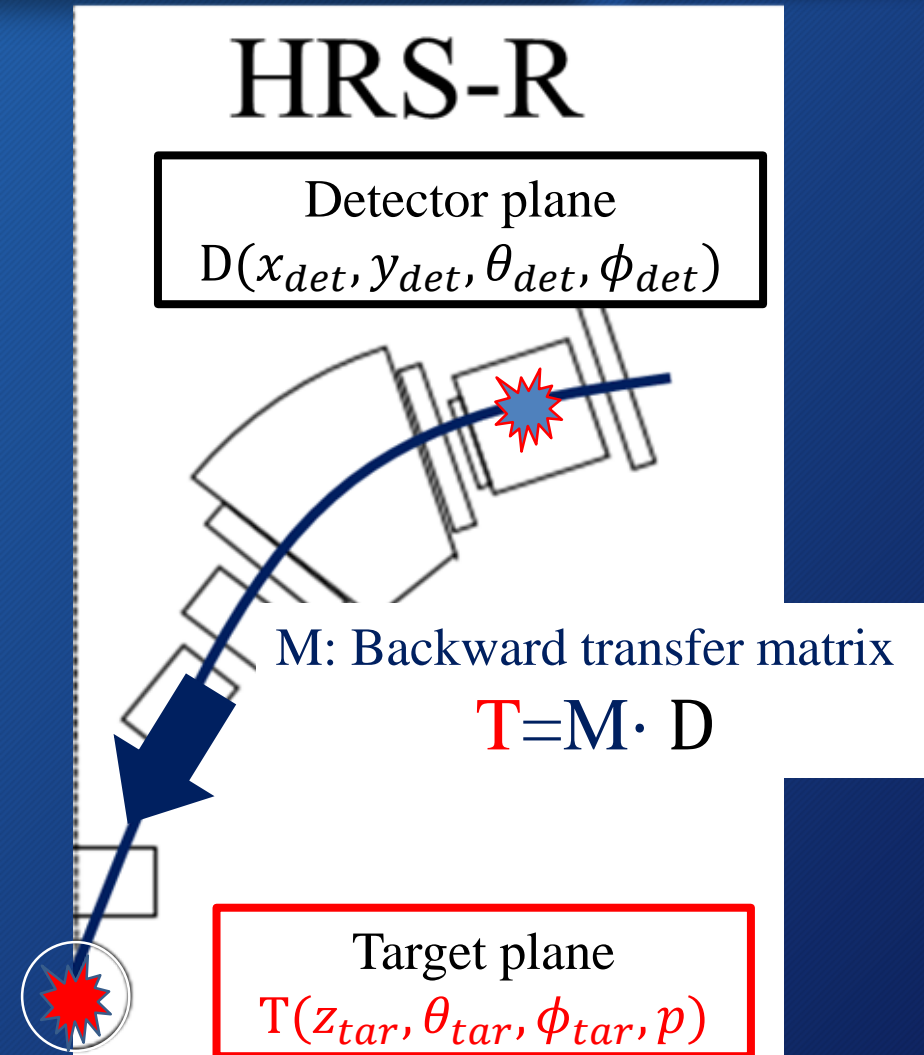
- (1) Kaon Identification (in master's thesis)
- (2) Backward transfer matrix tuning
- (3) Detector tuning



*nn*Λ analysis

Restriction on  $\Lambda n$  interaction ( $< 5\%$ )

Deciding on *nn*Λ state

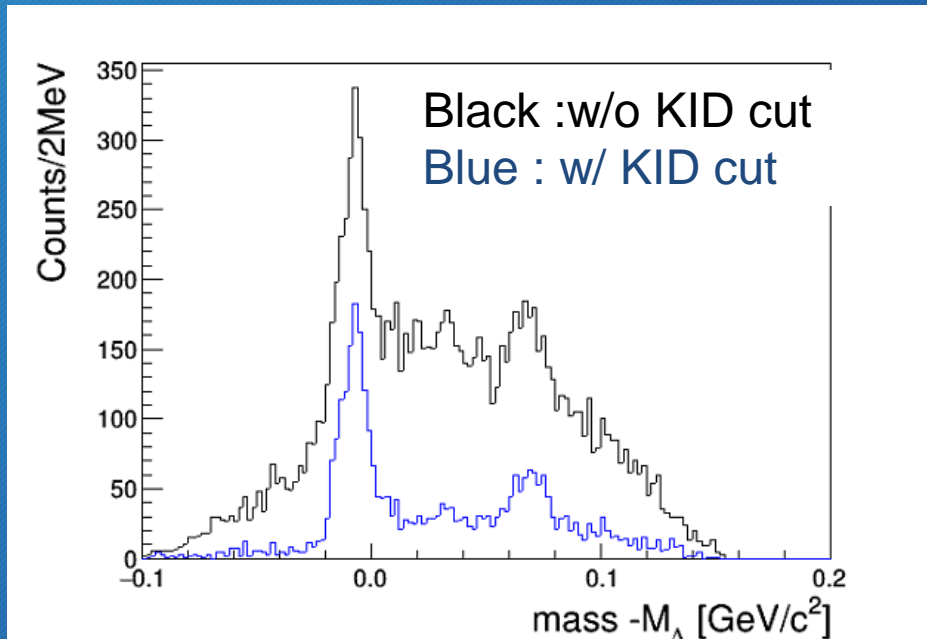


# After matrix tuning with Hydrogen data

3

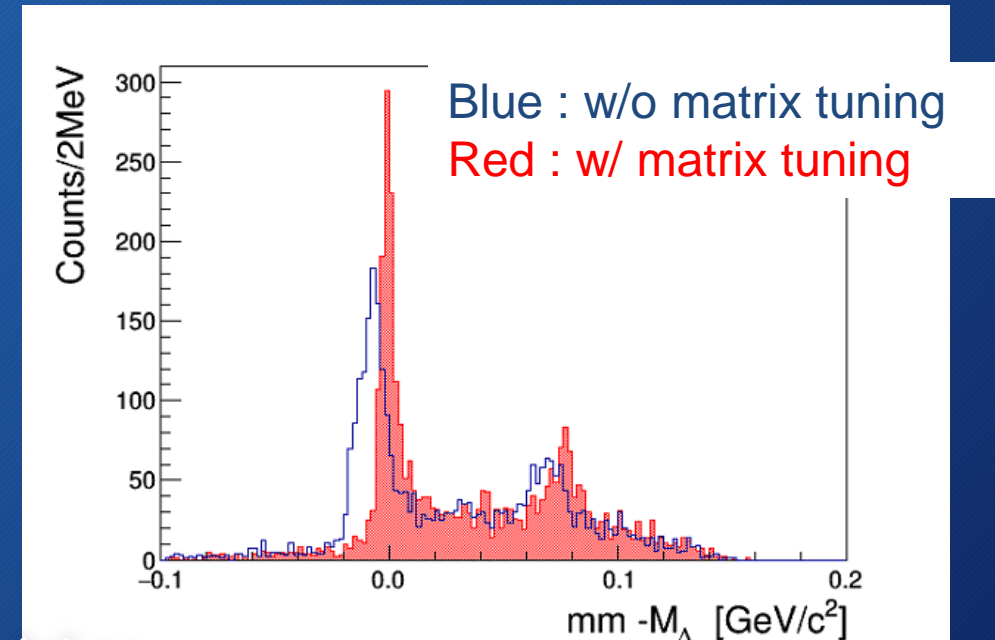
## (1) Kaon Identification

By Aerogel Cherenkov cut (AC1, AC2)  
 $\Lambda$  survival ratio > 90 %



## (2) Matrix Tuning

Resolution of  $\Lambda$  was achieved  $2.2 \text{ GeV}/c^2$   
 $\sigma_\Lambda = 2.2 \text{ MeV}, \mu_\Lambda = 11113.5 \text{ MeV}$



By good resolution and precision



search for the  $nn\Lambda$  state! (now analyzing)

## Oversea program (3 month)

- 9/17- 10/7 (20 days) in JLab



## Other plan for oversea program (~2 month)

- Preparation for  $^{40,48}_{\Lambda}\text{K}$  experiment at JLab (~2020)
- Preparation for measurement of  $B_{\Lambda}({}^3_{\Lambda}\text{H})$  experiment at Mainz (~2021)
- Discussion about  $nn\Lambda$  analysis with theorist