

# **CAFe run plans: 05/18/2022**

Update: Using the most updated table from Meekins  
(sent by Larry on 05/18/2022)

# Kinematic settings:

Ebeam (GeV)	$E'$ (GeV)	$\theta_e$ Degree	$ P_p $ GeV	$\theta_p$ Degree	Pm GeV	Q2_cen ter
10.6	8.55	8.3	1.325	66.4	0.4	2.1
10.6	8.55	8.3	1.820	48.3	0.15	2.1

# Event selection cuts for event rate calculation

## Acceptance cuts

SHMS (electron) acceptance cuts:

- 1)  $-10 < \delta_e < 22 \%$
- 2)  $-0.040 < \theta_e < 0.040$  rad
- 3)  $-0.024 < \phi_e < 0.024$  rad

HMS (proton) acceptance cuts:

- 1)  $-10 < \delta_p < 10 \%$
- 2)  $-0.060 < \theta_p < 0.060$  rad
- 3)  $-0.035 < \phi_p < 0.035$  rad

Convention: In-plane = yptar (MC) =  $\phi$  (Horizontal)  
Out-plane = xptar (MC) =  $\theta$  (Vertical)

## Kinematic cuts:

### MF cuts:

$P_m < 0.25$  GeV/c  
 $Q_2 > 1.8$

### SRC cuts:

$Q_2 > 1.8$   
 $P_m > 0.35$  GeV/c  
 $X_b > 1.2$   
 $\text{Theta}_{rq} < 40$   
 $E_m < 0.05$  GeV (cut RC tail)

# Target information used in calculation

Target	Max current ( $\mu\text{A}$ )	Areal Density ( $\text{g}/\text{cm}^2$ )
D2	80	1.67
Ca40	80	0.8
Ca48	80	0.8
Fe54	80	0.4152
C12	80	0.5244
Be9	80	0.978
B10	80	0.5722
B11	80	0.6344

# Updated Run plan (05/18/2022)

- Beam setup/checkout/MF kinematics 4h PAC
  - Calibration (BCM, boiling?, Optics, hydrogen?) 4h PAC
  - SRC kinematics (HMS move and magnet change) 2h PAC
  - SRC kinematics checkout 2h PAC
  - Overall target changes (MF and SRC) 2h PAC
- Com + Calib Time**  
**14 PAC hours**

**+ MF data taking**  
**7 PAC hours**

Run plan (PAC hour): SRC data taking (75 PAC hours)

Target	Run Hour (PAC hour)	Number of event
D2	7	5.3k
C12	7	5.0k
Ca48	12	8.7k
Ca40	12	8.7k
Fe54	20	8.7k
Be9	4	4.6k
B10	6.5	4.5k
B11	6.5	5.0k

**TOTAL: 14 + 7 + 75 = 96 PAC hours = 4 PAC days**