$x{>}1$ and EMC Effect (XEM2) Run Plan

October 13, 2022

1   XEM2 Production Run Plan - Part I

1.1   Charge Symmetric Background Studies at 20°- Part I

- **BEWARE:** the POLARITY is STILL POSITIVE

- For the entire section of 1.3: **SHMS S1X (1-7)** and **S2X (1-7)** on BOTH left and right sides are **OFF**

1.1.1   Setting 1

- Turn the **SHMS S1X (1-7)** and **S2X (1-7)** LEFT and RIGHT hodoscope paddles **OFF**.

- Set **HMS momentum** to **+3.40 GeV**.

- **SHMS angle: 8°**

- **SHMS momentum: +9.2 GeV**

- **HMS angle: 20°**

- **Trigger**: SHMS/HMS PS3 (ELCLEAN) **OR** SHMS/HMS PS1 (3/4)

- **Important note on the prescales:** All the other prescales that are NOT specified on each row at the Table 1 should be set to **-1**.

- **Prescale values are only estimated; adjust them on both SHMS and HMS Prescale GUIs accordingly to keep the rates below 3 kHz.**

- Take data with the SHMS and HMS simultaneously.

Table 1: CSB Studies at 20° - Setting 1

Target	I	HMS PS			SHMS PS			Est. Time	Done ?
	(μA)	PS1	PS2	PS3	PS1	PS2	PS3		
LD2	60	-1	-1	0	-1	-1	0	10 min	
12C	60	-1	-1	0	-1	-1	0	10 min	
12C	60	0	-1	-1	0	-1	-1	10 min	
40Ca	60	0	-1	-1	0	-1	-1	10 min	
40Ca	60	-1	-1	0	-1	-1	0	10 min	

1.1.2 Setting 2

- Make sure **SHMS S1X (1-7)** and **S2X (1-7)** LEFT and RIGHT hodoscope paddles are **OFF**.

- Set **HMS momentum** to **+3.04 GeV**.

- **SHMS angle: 8°**

- **SHMS momentum: +9.2 GeV**

- **HMS angle: 20°**

- **Trigger**: SHMS/HMS PS3 (ELCLEAN) **OR** SHMS/HMS PS1 (3/4)

- **Important note on the prescales:** All the other prescales that are NOT specified on each row at the **??** should be set to **-1**.

- **Prescale values are only estimated; adjust them on both SHMS and HMS Prescale GUIs accordingly to keep the rates below 3 kHz.**

- Take data with the SHMS and HMS simultaneously.

Table 2: CSB Studies at 20° - Setting 2

Target	I	HMS PS			SHMS PS			Est. Time	Done ?
	(μA)	PS1	PS2	PS3	PS1	PS2	PS3		
40Ca	60	-1	-1	0	-1	-1	0	10 min	
40Ca	60	0	-1	-1	0	-1	-1	10 min	
12C	60	0	-1	-1	0	-1	-1	10 min	
12C	60	-1	-1	0	-1	-1	0	10 min	
LD2	60	-1	-1	0	-1	-1	0	10 min	

1.1.3 Setting 3

- Make sure **SHMS S1X (1-7)** and **S2X (1-7)** LEFT and RIGHT hodoscope paddles are **OFF**.

- Set **HMS momentum** to **+2.71 GeV**.

- **SHMS angle: 8°**

- **SHMS momentum: +9.2 GeV**

- **HMS angle: 20°**

- **Trigger**: SHMS/HMS PS3 (ELCLEAN) **OR** SHMS/HMS PS1 (3/4)

- **Important note on the prescales:** All the other prescales that are NOT specified on each row at the Table 3 should be set to **-1**.

- **Prescale values are only estimated; adjust them on both SHMS and HMS Prescale GUIs accordingly to keep the rates below 3 kHz.**

- Take data with the SHMS and HMS simultaneously.

Table 3: CSB Studies at 20° - Setting3

Target	I	HMS PS			SHMS PS			Est. Time	Done ?
	(μA)	PS1	PS2	PS3	PS1	PS2	PS3		
LD2	60	-1	-1	0	-1	-1	0	10 min	
LH2	60	-1	-1	0	-1	-1	0	10 min	
12C	60	0	-1	-1	0	-1	-1	10 min	
12C	60	-1	-1	0	-1	-1	0	10 min	
Ca40	60	-1	-1	0	-1	-1	0	10 min	
Ca40	60	0	-1	-1	0	-1	-1	10 min	

1.1.4 Setting 4

- Make sure **SHMS S1X (1-7)** and **S2X (1-7)** LEFT and RIGHT hodoscope paddles are **OFF**.

- Set **HMS momentum** to **+2.421 GeV**.

- **SHMS angle: 8°**

- **SHMS momentum: +9.2 GeV**

- **HMS angle: 20°**

- **Trigger**: SHMS/HMS PS3 (ELCLEAN) **OR** SHMS/HMS PS1 (3/4)

- **Important note on the prescales:** All the other prescales that are NOT specified on each row at the Table 4 should be set to **-1**.

- **Prescale values are only estimated; adjust them on both SHMS and HMS Prescale GUIs accordingly to keep the rates below 3 kHz.**

- Take data with the SHMS and HMS simultaneously.

- Total estimated time for section 2.3 including the momentum and target changes: **16.5 hrs**. Estimated run times are with 100% efficiency.

Table 4: CSB Studies at 20° - Setting 4

Target	I	HMS PS			SHMS PS			Est. Time	Done ?
	(μA)	PS1	PS2	PS3	PS1	PS2	PS3		
Ca40	60	-1	-1	0	-1	-1	0	10 min	
Ca40	60	0	-1	-1	0	-1	-1	10 min	
Be9	60	0	-1	-1	0	-1	-1	10 min	
Be9	60	-1	-1	0	-1	-1	0	10 min	
Al dummy	40	-1	-1	0	-1	-1	0	10 min	
Al dummy	40	0	-1	-1	0	-1	-1	10 min	
LD2	60	0	-1	-1	0	-1	-1	10 min	
LD2	60	-1	-1	0	-1	-1	0	10 min	
LH2	60	-1	-1	0	-1	-1	0	10 min	
LH2	60	0	-1	-1	0	-1	-1	10 min	
Ca48	60	0	-1	-1	0	-1	-1	10 min	
Ca48	60	-1	-1	0	-1	-1	0	10 min	
C12	60	-1	-1	0	-1	-1	0	10 min	
C12	60	0	-1	-1	0	-1	-1	10 min	
B4C-11	60	0	-1	-1	0	-1	-1	10 min	
B4C-11	60	-1	-1	0	-1	-1	0	10 min	
B4C-10	60	-1	-1	0	-1	-1	0	10 min	
B4C-10	60	0	-1	-1	0	-1	-1	10 min	
Sn (Tin)	40	-1	-1	0	-1	-1	0	10 min	
Sn (Tin)	40	0	-1	-1	0	-1	-1	10 min	
Titanium	40	0	-1	-1	0	-1	-1	10 min	
Titanium	40	-1	-1	0	-1	-1	0	10 min	
54Fe	40	-1	-1	0	-1	-1	0	10 min	
54Fe	40	0	-1	-1	0	-1	-1	10 min	
108Ag	60	0	-1	-1	0	-1	-1	10 min	
108Ag	60	-1	-1	0	-1	-1	0	10 min	
232Thorium	60	-1	-1	0	-1	-1	0	10 min	
232Thorium	60	0	-1	-1	0	-1	-1	10 min	
Ni58	60	0	-1	-1	0	-1	-1	10 min	
Ni58	60	-1	-1	0	-1	-1	0	10 min	
Ni64	60	-1	-1	0	-1	-1	0	10 min	
Ni64	60	0	-1	-1	0	-1	-1	10 min	