



---

# DC Calibrations

---

**Mr. Muhammad Junaid**  
**Ph.D. Student**  
**Department of Physics,**  
**University of Regina, Canada**

- Updated HMS DC calibrations for LH+, LD- and LD+ data from 2021 and 2022 run period.
- Updated SHMS DC calibrations for LH+, LD- and LD+ data from 2021 and 2022 run period.
- Cuts applied on HMS:

Cuts for LH+ & LD+
H.cer.npeSum > 1.5
H.cal.etotnorm > 0.7

Cuts for LD-
H.cer.npeSum > 1.5
H.cal.etotnorm > 0.7

- Cuts applied on SHMS:

Cuts for LH+ & LD+
P.hgcer.npeSum > 1.5
P.aero.npeSum > 1.5
P.cal.etotnorm < 0.7

Cuts for LD-
P.hgcer.npeSum > 1.5
P.aero.npeSum > 1.5
P.cal.etotnorm > 0.7
P.ngcer.npeSum > 0.5

- Also applied multiplicity cut for both HMS and SHMS.

# Pion-LT Run Period 2021

DC Calibration

Physics Settings	Run Numbers	Status
BE: 9.177 GeV, Target: LH+, Q2=1.60 W=3.08 x=0.16	Right: 11978, 11990 Center: 11971, 11977 Left: 11883, 11901	HMS, SHMS
BE: 9.177 GeV, Target: LD+, Q2=1.60 W=3.08 x=0.16	Right: 11992, 12021 Center: 11947, 11968 Left-1: 11928, 11944 Left-2: 11919	HMS, SHMS
BE: 9.177 GeV, Target: LD-, Q2=1.60 W=3.08 x=0.16	Right: 12026, 12046 Left: 12077 Center: 12052, 12066	HMS, SHMS
BE: 9.177 GeV, Target: LH+, Q2=6.00 W=3.19 x=0.39	Right: 12262, 12284, 12302, 12340, 12375, 12411, 12443 Center: 12447, 12463, 12508, 12551, 12590	HMS, SHMS
BE: 9.177 GeV, Target: LH+, Q2=8.50 W=2.79 x=0.55	Center: 12591, 12625, 12677, 12710, 12739, 12754, 12791, 12835, 12876, 12939, 12967, 13011, 13037	HMS, SHMS
BE: 5.986 GeV, Target: LH+, Q2=3.85 W=2.02 x=0.55	All: 13063, 13090	HMS, SHMS

# Pion-LT Run Period 2021

DC Calibration

Physics Settings	Run Numbers	Status
BE: 9.876 GeV, Target: LH+, Q2=1.60 W=3.08 x=0.16	All: 13171, 13199	HMS, SHMS
BE: 9.876 GeV, Target: LH+, Q2=3.85 W=3.07 x=0.31	All: 13202, 13229	HMS, SHMS
BE: 9.876 GeV, Target: LH+, Q2=5.00 W=2.95 x=0.39	Right: 13231 Center: 13255 Left: 13276, 13306	HMS, SHMS
BE: 9.876 GeV, Target: LH+, Q2=6.00 W=3.19 x=0.39	Right: 13309, 13357, 13414, 13444 Center: 13360, 13412	HMS, SHMS
BE: 7.937 GeV, Target: LD-, Q2=6.00 W=2.40 x=0.55	Right: 13448, 13467 Center: 13479, 13529, 14736, 14753 Left: 13532, 13586, 14776	HMS, SHMS
BE: 7.937 GeV, Target: LD-, Q2=3.85 W=3.07 x=0.31	Right: 13589, 13693, 14628, 14682 Center: 13710, 13776, 13850, 14735	HMS, SHMS

# Pion-LT Run Period 2021

DC Calibration

Physics Settings	Run Numbers	Status
BE: 7.937 GeV, Target: LH+, Q2=6.00 W=2.40 x=0.55	Right: 13950, 13982 Center: 14010 Left: 14078, 14109	HMS, SHMS
BE: 7.937 GeV, Target: LD+, Q2=6.00 W=2.40 x=0.55	Right: 13921, 13949 Center: 14018, 14044 Left: 14073	HMS, SHMS
BE: 7.937 GeV, Target: LH+, Q2=2.45 W=3.20 x=0.21	Center: 14545 Left: 14564	HMS, SHMS
BE: 7.937 GeV, Target: LH+, Q2=3.85 W=3.07 x=0.31	Right: 14208, 14246 Center: 14318, 14342 Left: 14365	HMS, SHMS
BE: 7.937 GeV, Target: LD+, Q2=3.85 W=3.07 x=0.31	Right: 14251, 14284 Center: 14312 Left: 14386	HMS, SHMS
BE: 7.937 GeV, Target: LH+, Q2=5.00 W=2.95 x=0.39	Center: 14458 Left: 14488, 14539	HMS, SHMS

# Pion-LT Run Period 2022

DC Calibration

Physics Settings	Run Numbers	Status
BE: 10.549 GeV, Target: LH+, Q2=2.45 W=3.20 x=0.20	Right: 15838, Center: 15820 Left: 15810	HMS, SHMS
BE: 10.549 GeV, Target: LH+, Q2=3.85 W=3.07 x=0.31	Right: 15843 Center: 15881 Left: 15897	HMS, SHMS
BE: 10.549 GeV, Target: LD+, Q2=3.85 W=3.07 x=0.31	Right: 15853 Center: 15874 Left: 15909	HMS, SHMS
BE: 10.549 GeV, Target: LH+, Q2=5.00 W=2.95 x=0.39	Right: 15923 Center: 15951 Left: 15975	HMS, SHMS
BE: 10.549 GeV, Target: LH+, Q2=6.00 W=3.19 x=0.39	Right: 15463, 15493, 15554 Center: 15337, 15384 Left: 15621	HMS, SHMS
BE: 10.549 GeV, Target: LH+, Q2=8.50 W=2.79 x=0.55	Center: 15631, 15668, 15716, 15763, 15808	HMS, SHMS

# Pion-LT Run Period 2022

DC Calibration

Physics Settings	Run Numbers	Status
BE: 10.549 GeV, Target: LD-, Q2=3.85 W=2.62 x=0.39	All: 15977, 16000	HMS, SHMS
BE: 10.549 GeV, Target: LD-, Q2=6.00 W=2.40 x=0.55	All: 16021	HMS, SHMS
BE: 10.549 GeV, Target: LD-, Q2=3.85 W=3.07 x=0.31	Right: 15152, 15170 Center: 15228 Left: 15264	HMS, SHMS
BE: 8.479 GeV, Target: LH+, Q2=2.45 W=3.20 x=0.20	All: 16063, 16095	HMS, SHMS
BE: 8.479 GeV, Target: LH+, Q2=3.85 W=3.07 x=0.31	All: 16129, 16157	HMS, SHMS
BE: 8.479 GeV, Target: LH+, Q2=2.12 W=2.05 x=0.38	All: 16232	HMS, SHMS
BE: 6.395 GeV, Target: LH+, Q2=1.45 W=2.02 x=0.31	All: 16245, 16261	HMS, SHMS

# Pion-LT Run Period 2022

DC Calibration

Physics Settings	Run Numbers	Status
BE: 6.395 GeV, Target: LH+, Q2=2.73 W=2.63 x=0.31	All: 16289, 16318	HMS, SHMS
BE: 6.395 GeV, Target: LH+, Q2=3.85 W=2.62 x=0.39	Center: 16332, 16394 Left: 16373, 16393	HMS, SHMS
BE: 6.395 GeV, Target: LD+, Q2=3.85 W=2.62 x=0.39	All: 16369, 16401	HMS, SHMS
BE: 6.395 GeV, Target: LH+, Q2=1.60 W=3.08 x=0.15	Right: 16417 Left: 16505	HMS, SHMS
BE: 6.395 GeV, Target: LD+, Q2=1.60 W=3.08 x=0.15	Right: 16444 Left: 16480	HMS, SHMS
BE: 6.395 GeV, Target: LD-, Q2=3.85 W=2.62 x=0.39	Center: 16588, 16625, 16894 Left: 16520, 16550, 16585, 16856, 16878, 16915	HMS, SHMS
BE: 6.395 GeV, Target: LD-, Q2=1.60 W=3.08 x=0.15	Left-1: 16770, 16813 Left-2: 16626, 16682	HMS, SHMS



**THANK YOU**