

# Estimation of CR and pion background for MARATHON

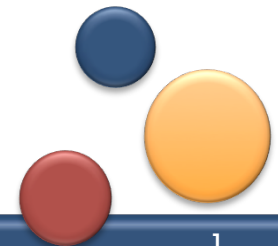
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Table 1: DIS kinematics for the  $F_2^n / F_2^p$  and d/u Extraction (LHRS)

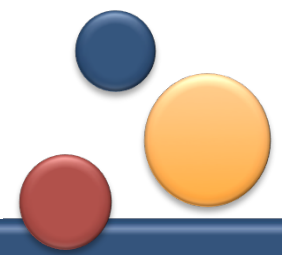
$x$	W	$Q^2$	E	$E'$	$\theta$
0.83	1.81	11.68	10.60	3.10	34.68
0.79	1.96	11.12	10.60	3.10	33.81
0.75	2.10	10.55	10.60	3.10	32.92
0.71	2.23	9.99	10.60	3.10	32.01
0.67	2.35	9.43	10.60	3.10	31.07
0.63	2.47	8.86	10.60	3.10	30.10
0.59	2.58	8.30	10.60	3.10	29.11
0.55	2.69	7.74	10.60	3.10	28.08
0.51	2.79	7.18	10.60	3.10	27.02
0.47	2.89	6.61	10.60	3.10	25.92
0.43	2.98	6.05	10.60	3.10	24.78
0.39	3.08	5.49	10.60	3.10	23.58
0.35	3.17	4.92	10.60	3.10	22.32
0.31	3.25	4.36	10.60	3.10	20.99
0.27	3.34	3.80	10.60	3.10	19.58
0.23	3.42	3.24	10.60	3.10	18.06

Note: The kinematics are **NOT** the official ones from the spokesperson. Just playing around with numbers.



Cross Sections and  $F_2^h / F_2^t$  Ratios and Counting Rates (LHRS) (  $I = 20 \mu\text{A}$  )

$x$	$\sigma(^3\text{He})$ ( $\frac{\text{nb}}{\text{sr.GeV}}$ )	$\sigma(^3\text{H})$ ( $\frac{\text{nb}}{\text{sr.GeV}}$ )	$F_2^h / F_2^t$	CR( $^3\text{He}$ ) (e/h)	CR( $^3\text{H}$ ) (e/h)	CR(D) (e/h)	t( $^3\text{He}$ ) (h)	t( $^3\text{H}$ ) (h)	t(D) (h)	$\pi/e$
0.83	0.0352	0.0284	1.2412	3001	2106	4137	6.66	9.50	4.83	1
0.79	0.0644	0.0503	1.2814	5346	3633	7266	3.74	5.50	2.75	1
0.75	0.1095	0.0841	1.3022	8842	5914	11935	2.26	3.38	1.68	1
0.71	0.1768	0.1351	1.3087	13884	9240	18699	1.44	2.16	1.07	1
0.67	0.2759	0.2114	1.3055	21064	14053	28399	0.95	1.42	0.70	1
0.63	0.4201	0.3242	1.2957	31037	20864	41983	0.64	0.96	0.48	1
0.59	0.6248	0.4875	1.2817	44629	30327	60654	0.45	0.66	0.33	1
0.55	0.9133	0.7217	1.2655	62993	43354	86093	0.32	0.46	0.23	2
0.51	1.3126	1.0518	1.2479	86984	60709	119621	0.23	0.33	0.17	2
0.47	1.8743	1.5247	1.2293	119150	84419	164961	0.17	0.24	0.12	2
0.43	2.6498	2.1902	1.2099	161296	116116	224921	0.12	0.17	0.09	3
0.39	3.7248	3.1306	1.1898	215758	157944	303163	0.09	0.13	0.07	3
0.35	5.2565	4.4954	1.1693	287713	214308	407502	0.07	0.09	0.05	4
0.31	7.4503	6.4861	1.1486	384016	291182	548407	0.05	0.07	0.04	5
0.27	10.6970	9.4818	1.1282	514605	397290	741112	0.04	0.05	0.03	6
0.23	15.7278	14.1927	1.1082	698724	549166	1014802	0.03	0.04	0.02	8



Cross Sections and  $F_2^n / F_2^p$  Ratios and Counting Rates (LHRS) (  $I = 23\mu A$  )

$x$	$\sigma(^3\text{He})$ ( $\frac{nb}{sr.GeV}$ )	$\sigma(^3\text{H})$ ( $\frac{nb}{sr.GeV}$ )	$F_2^h / F_2^t$	CR( $^3\text{He}$ ) (e/h)	CR( $^3\text{H}$ ) (e/h)	CR(D) (e/h)	t( $^3\text{He}$ ) (h)	t( $^3\text{H}$ ) (h)	t(D) (h)
0.83	0.0352	0.0284	1.2412	3451	2422	4757	5.80	8.26	4.20
0.79	0.0644	0.0503	1.2814	6147	4178	8356	3.25	4.79	2.39
0.75	0.1095	0.0841	1.3022	10169	6801	13725	1.97	2.94	1.46
0.71	0.1768	0.1351	1.3087	15967	10626	21503	1.25	1.88	0.93
0.67	0.2759	0.2114	1.3055	24223	16161	32659	0.83	1.24	0.61
0.63	0.4201	0.3242	1.2957	35693	23993	48280	0.56	0.83	0.41
0.59	0.6248	0.4875	1.2817	51323	34876	69752	0.39	0.57	0.29
0.55	0.9133	0.7217	1.2655	72442	49857	99007	0.28	0.40	0.20
0.51	1.3126	1.0518	1.2479	100032	69815	137565	0.20	0.29	0.15
0.47	1.8743	1.5247	1.2293	137023	97082	189705	0.15	0.21	0.11
0.43	2.6498	2.1902	1.2099	185491	133534	258659	0.11	0.15	0.08
0.39	3.7248	3.1306	1.1898	248122	181635	348637	0.08	0.11	0.06
0.35	5.2565	4.4954	1.1693	330870	246454	468627	0.06	0.08	0.04
0.31	7.4503	6.4861	1.1486	441618	334859	630668	0.05	0.06	0.03
0.27	10.6970	9.4818	1.1282	591796	456883	852279	0.03	0.04	0.02
0.23	15.7278	14.1927	1.1082	803533	631541	1167023	0.02	0.03	0.02

