Nsrl4 Schedule and Parameters

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Caution! The following schedule is subject to change. Please note release date above.

NSRL is to begin taking beam on 30 August 2004.

Beam Order:

1. Titanium. 1000 MeV per nucleon. Aug 30–31 (Mon–Tue).
2. Silicon. 600 MeV per nucleon. Sept 1–2 (Wed–Thur).
3. Iron. 1000 MeV per nucleon. Sept 3–16 (Fri–Thur).
4. Protons. 1000 MeV per nucleon. Sept 14 and 16 (Tue and Thur).
5. Iron. 600 MeV per nucleon. Sept 17–23 (Fri–Thur).
6. Protons. 1000 MeV per nucleon. Sept 24–25 (Fri–Sat).
7. Iron. 1000 MeV per nucleon. Sept 26 (Sun).
8. Oxygen. 1000 MeV per nucleon. Sept 27–29 (Mon–Wed).
9. Oxygen. 600 MeV per nucleon. Sept 29–30 (Wed–Thur).
10. Protons. 1000 MeV per nucleon. Sept 30–Oct 1 (Thur–Fri).

August 23–27 (Mon–Fri) we will need to establish setups for O^{8+} and Si^{13+} in Booster. Setup for Ti^{18+} will occur August 28–29 (Sat–Sun).

The weekend of September 18–19 we would like to setup Copper ions (for RHIC) in Booster and spiral in AGS if possible.

Booster User 1 is to be used for RHIC operations with Copper. Protons for NSRL will be set up on User2. All other ions for NSRL will be set up on User3.

Table 1: Titanium Parameters at Booster Injection. The damaged inflector septum was replaced in October 2003.

Parameter	Ti^{18+}	Ti^{18+}	Ti^{18+}	Unit
mc^2	44.6540277	44.6540277	44.6540277	GeV
Date	24 June 03	13 Nov 03	20 Apr 04	
11DH1 NMR Probe	4364.1	4364.1	4364.1	Gauss
hf	358.45(10)	358.452	358.242	kHz
h	3	3	3	
$T = 1/f$	8.3694	8.3693	8.3742	μs
Kinetic Energy W	145.101856	145.103483	144.932686	MeV
$B\rho$	0.667638100	0.667641849	0.6672481655	Tm
$B\rho/\rho$	481.507	481.510	481.2256	Gauss
Booster Hall Probe	451.2	451.8	581.2	Gauss
Booster Gauss Clock	25.2	25.2	-108.0	Gauss
Injection Field H	476.4	477.0	473.2	Gauss
Inflector Setpoint V_S	31.556	30.835	30.941	kV
Calculated Voltage V_I	31.304	31.305	31.268	kV

Table 2: Titanium Parameters at Booster Injection. The damaged inflector septum was replaced in October 2003.

Parameter	Ti^{18+}	Ti^{18+}	Ti^{18+}	Unit
mc^2	44.6540277	44.6540277	44.6540277	GeV
Date	13 Nov 03	20 Apr 04	31 Aug 04	
11DH1 NMR Probe	4364.1	4364.1	4364.1	Gauss
hf	358.452	358.242	358.242	kHz
h	3	3	3	
$T = 1/f$	8.3693	8.3742	8.3742	μs
Kinetic Energy W	145.103483	144.932686	144.932686	MeV
$B\rho$	0.667641849	0.6672481655	0.6672481655	Tm
$B\rho/\rho$	481.510	481.2256	481.2256	Gauss
Booster Hall Probe	451.8	581.2	591.7	Gauss
Booster Gauss Clock	25.2	-108.0	-118.0	Gauss
Injection Field H	477.0	473.2	473.7	Gauss
Inflector Setpoint V_S	30.835	30.941	31.292	kV
Calculated Voltage V_I	31.305	31.268	31.268	kV

Table 3: Silicon and Copper Parameters at Booster Injection

Parameter	Si^{9+}	Si^{13+}	Cu^{11+}	Unit
mc^2	26.05574058	26.05369658	58.61292698	GeV
Date	15 Mar 04	–	19 Sept 04	
11DH1 NMR Probe	5580	4364.1	8499.507	Gauss
hf	392.545	442.455	650.493	kHz
h	3	3	6	
$T = 1/f$	7.6424	6.7804	9.2238	μs
Kinetic Energy W	101.6387	129.322	156.675	MeV
$B\rho$	0.8538	0.6669	1.300433	Tm
$B\rho/\rho$	615.769	480.974	937.884	Gauss
Booster Hall Probe	5858	–	9166	Counts
Booster Gauss Clock	252	–	130	Counts
"Injection Field"	611.0	475.8	929.6	Gauss
Inflector Setpoint	43.757	38.598	55.043	kV
Inflector Predicted	43.841	38.598	55.327	kV

Table 4: Iron and Proton Parameters at Booster Injection

Parameter	Fe^{20+}	Proton	Proton	Unit
mc^2	52.0928437	0.938271998	0.938271998	GeV
Date	5 Nov 03	4 Jun 04	24 Sept 04	
11DH1 NMR Probe	4364.1	3971.15	3971.15	Gauss
hf	341.131	566.033	566.033	kHz
h	3	2	2	
$T = 1/f$	8.79427	3.53336	2.53336	μs
Kinetic Energy W	153.2415	17.5008	17.5008	MeV
$B\rho$	0.6669	0.6073	0.6073	Tm
$B\rho/\rho$	480.974	437.990	437.990	Gauss
Booster Hall Probe	451.4	418.3	418.2	Gauss
Booster Gauss Clock	25.5	14.0	14.3	Gauss
Injection Field H	476.9	432.3	432.5	Gauss
Inflector Setpoint V_S	29.534	67.419	67.507	kV
Inflector Predicted V_I	29.759	67.448	67.448	kV

Table 5: Iron, Proton, and Oxygen Parameters at Booster Injection

Parameter	Fe^{20+}	Proton	O^{8+}	Unit
mc^2	52.0928437	0.938271998	14.8950792	GeV
Date	5 Nov 03	4 Jun 04	–	
11DH1 NMR Probe	4364.1	3971.15	4364.1	Gauss
hf	341.131	566.033	475.886	kHz
h	3	2	3	
$T = 1/f$	8.79427	3.53336	6.30403	μs
Kinetic Energy W	153.2415	17.5008	85.6295	MeV
$B\rho$	0.6669	0.6073	0.6669	Tm
$B\rho/\rho$	480.974	437.990	480.974	Gauss
Booster Hall Probe	451.4	418.3	–	Gauss
Booster Gauss Clock	25.5	14.0	–	Gauss
Injection Field H	476.9	432.3	475.8	Gauss
Inflector Setpoint V_S	29.534	67.419	41.514	kV
Inflector Predicted V_I	29.759	67.448	41.514	kV

Table 6: Titanium Parameters at Extraction

Parameter	Ti^{18+}	Ti^{18+}	Ti^{18+}	Unit
mc^2	44.6540277	44.6540277	44.6540277	GeV
Date	20 Apr 04	13 Nov 03	18 Nov 03	
hf	3.93382	3.9105	3.9103	MHz
h	3	3	3	
$T = 1/f$	0.76262	0.76717	0.76720	μs
Kinetic E per Nucleon	1048.3147	1008.3523	1008.0210	MeV
$B\rho$	15.53310227	15.12915494	15.12579556	Tm
$B\rho/\rho$	11202.62	10911.29	10908.86	Gauss
Magnetic Field Setpoint	11387	11100	11100	Gauss
Calculated MM Current	4610	4490	4489	Amps
MM Current Setpoint	4815	4663	4663	Amps

Table 7: Silicon and Copper Parameters at Booster Extraction

Parameter	Si^{9+}	Si^{13+}	Cu^{11+}	Unit
mc^2	26.05574058	26.05369658	58.61292568	GeV
Date	12 Mar 04	–	–	
hf	3.54030	3.54030	3.850	MHz
h	3	3	6	
$T = 1/f$	0.84739	0.84739	1.55844	μs
Kinetic E per Nucleon	601.1123	601.0651	101.154	MeV
$B\rho$	12.62517797	8.73982216	8.51050963	Tm
$B\rho/\rho$	9105.40	6303.24	6142.87	Gauss
Magnetic Field Setpoint	9239	6410.8	6248.4	Gauss
Calculated MM Current	3747	2638	2571	Amps
MM Current Setpoint	3819	–	–	Amps

Table 8: Iron and Proton Parameters at Extraction

Parameter	Fe^{20+}	Fe^{20+}	Proton	Unit
mc^2	52.0928437	52.0928437	0.938271998	GeV
Date	28 Mar 04	12 Apr 04	–	
hf	3.907680	3.55888	2.600120	MHz
h	3	3	2	
$T = 1/f$	0.76772	0.84296	0.769195	μs
Kinetic E per Nucleon	1003.6298	614.8564	1000.0000	MeV
$B\rho$	15.83497291	11.52230630	5.65737292	Tm
$B\rho/\rho$	11420.33	8309.99	4080.15	Gauss
Magnetic Field Setpoint	11600	8471	4159	Gauss
Calculated MM Current	4700	3420	1679	Amps
MM Current Setpoint	4934	3495	1710	Amps

Table 9: Oxygen Parameters at Booster Extraction

Parameter	O^{8+}	O^{8+}	Unit
mc^2	14.8950792	14.8950792	GeV
Date	–	–	
hf	3.542515	3.908045	MHz
h	3	3	
$T = 1/f$	0.846856	0.767647	μs
Kinetic E per Nucleon	603	1005	MeV
$B\rho$	8.13329025	11.32393720	Tm
$B\rho/\rho$	5865.80	8166.93	Gauss
Magnetic Field Setpoint	5967.7	8298.9	Gauss
Calculated MM Current	2456	3415	Amps
MM Current Setpoint	–	–	Amps