The APEX Program

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APEX Workshop 2008

Science Education Center, BNL, December 4-5 2008

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APEX operations statistics

Run	Scheduled / Planned %	Beam / scheduled % (availability)
Run-3	80	65
Run-4	90	84
Run-5	84	83
Run-6	89	86
Run-7	92	72 (physics: 49 %)
Run-8	97	83.4 (physics: 59 %)

Old accounting

"Ops" accounting

Run-8 APEX average availability: 83.4% (ops accounting)

Run-8 Operations time at store : ~60 %

- Long time spent at injection
- Ramps often with limited intensity
- Re-scheduling of activities on the fly

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Run-8 statistics in details

Run8 date	scheduled interval	scheduled duration (h)	actual interval	actual duration (h)	APEX hours(OpLog)	Failure hours	APEX/scheduled %
4-Dec	2000-0800	12	2040-0630	9.83	7.75	4.88	64.6%
12-Dec	0500-1700	12	0500-1700	12.00	11.67	0.28	97.3%
18-Dec	2000-0800	12	2100-0800	11.00	9.62	1.28	80.2%
26-Dec	0600-1800	12	1000-1630	6.50	6.50	0.00	54.2%
1-Jan	2000-0800	12	2000-0800	12.00	10.93	1.11	91.1%
9-Jan	0500-1700	12	0500-1830	13.50	9.30	3.78	77.5%
15-Jan	2000-0800	12	2040-0800	11.33	10.66	0.68	88.8%
23-Jan	0500-1700	12	0520-1700	11.66	11.62	0	96.8%
27-Jan	2000-0800	12	2020-0800	11.66	11.12	0.27	92.7%
14-Feb	0500-1700	12	0530-1630	11	10.76	0.23	89.7%
20-Feb	0500-1700	12	0525-1650	11.42	9.67	1.67	80.6%
26-Feb	2000-0800	12	2110-0720	10.17	9.88	1.67	82.3%
5-Mar	0600-1300	7	0910-1620	7.17	6.48	0.68	92.6%
totals		151		139.23	125.96	16.53	83.4%

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Run-8 overview

http://www.c-ad.bnl.gov/APEX/APEX2008/

APEX Sessions	APEX elogs	APEX Results
December 4-5, 2007	e-log	Summary ORM Yellow-Optics-1 Yellow-Optics-2 E-cloud Nonlinear-chrom
December 12, 2007	e-log	Summary Energy-loss Optics Collimation-injection Beta-squeeze
December 18-19, 2007	e-log	*Summary* Beta-squeeze Injection-drifts-correction Optics
December 26, 2007	e-log	*Summary* Beta-squeeze Beta*-measurement
January 1-2, 2008	e-log	Summary Alpha-knobs Optics Collimation-ramp Beta-star-waist Transition-instability Longitudinal-Vernier-scan
January 9, 2008	e-log	Summary IBS-measurements ORM
January 15-16, 2008	e-log	Summary Polarimeter-profiles Hybrid-Tune-Tracker Chromaticity-jump Gold77 Collimation-ramp Transition-RF-matching IP-knobs Localized-impedance
January 23, 2008	e-log	Summary Polarimeter-profiles Beta-beat-Impedance Gradient-errors –ORM Chromaticity-jump Gold-77 Transition-instability Hybrid-Tune-Tracker Collimation-ramp IR-bumps
January 27-28, 2008	e-log	Polarimeter-profiles ORM-corrections Gold-77 Nonlinear-chrom Inj-drifts Beam-growth-no-collisions
February 14, 2008	e-log	Near-integer-WP Beta-squeeze-0.6 Collimation-efficiency Chrom-feedback Impedance
February 20, 2008	e-log	Beta-squeeze-0.6 Coherent-spin-precession Polarimeter RF-phasing Chrom-feedback
February 26-27, 2008	e-log	Beta-squeeze-0.6 RF-phasing Polarimeter Coherent-spin-precession
March 5, 2008	e-log	Longitudinal-Vernier-scan Chrom-feedback Radial-feedback Coherent-spin-precession Impedance-localization

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12 sessions of APEX in Run-8

APEX Run-8: studies with d-Au

08-36	0A	IBS with decoupling	→ *transverse stochastic cooling*
08-17	0A	Test of ramp and operations with beta*< 0.8m + beta* measurements – 2 techniques + test of IP knobs	→ *30+% luminosity*
06-31	0A	ORM Measurements	→ *beta beat correction (only partial)*
07-33	0A	Tune and chromatic drift correction at injection	→ *in operations*
08-14	0A	Collimation on the ramp	→ *~operational*
08-27	0A	AC dipole optics measurements, corrections	
08-29	0A	Polarimeter profiles	→ *emittance at injection, store*
08-34	0A	Beta beat measurement	→ *corrections at injection, store*
08-17	0A	Injection drift correction	→ *operational now*
08-06	0A	Nonlinear chromaticity measurements	
08-01	1A	Electron cloud location	→ *performance limits*
08-18	1A	Stability threshold at transition	→ *performance limits*
08-07	1B	Energy Loss of Debunched Beam	→ *fundamental measurement*
08-02	1B	Au31+ in AGS	→ *operations RHIC low energy, GSI*
08-24	1B	Gold-77 in RHIC	→ *cooling (to be confirmed)*

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APEX Run-8: studies with P-P

08-17	0A	Beta*=0.6m	→ *operations this run (luminosity)*
08-42	0A	Near integer WP	→ *not operational (without orbit control)*
08-13	0A	Collimation efficiency	→ *collimation system upgrade*
08-45	0A	Polarimeter studies	→ *improvements needed for high bunch intensity*
08-06	0A	Chromaticity measurement, feedback	→ *Hybrid Tune Tracker*
08-04	0A	Impedance localization data	→ *possible impedance reduction*
07-03	0A	Coherent spin precession	→ *design of RHIC spin flippers*
08-16	0A	RF phasing	→ *non operational for PP due to beam loading*
08-41	0A	Longitudinal Vernier scan	→ *operations optimization*

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APEX Run-8: what did not get done...
only bigger "ticket items"

d-Au:

- Convincing linear optics corrections (many attempts and progress but nothing operational yet….)
- *(further) development of IBS lattice*

P-P:

- Spin experiments, in general
- Long-range beam beam study (wires)
- Demonstration of chromaticity feedback
- *RHIC P-P ramp with WP < 0.7*
- *Optics for PP-2-PP*

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Plans for Run-9

Program limited to P-P experiments:

250 GeV 5 weeks of physics
100 GeV ~9 weeks of physics (assuming resolution of CR)

Program discussion: this workshop

Deadline proposals: January 15

Meeting AEAC: 3rd or 4th week in January

Collection of APEX Results

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