

Fulvia Pilat

APEX Workshop 2007

APEX

Program Review

BNL - November 1-2, 2007

APEX operations statistics

	Run-3	Run-4	Run-5	Run-6
scheduled/planned	80 %	90 %	84 %	89%
beam/scheduled	65 %	84%	83 %	86%

date	scheduled interval	scheduled duration (h)	actual interval	actual duration (h)	APEX hours	Failure hours	APEX/scheduled %
4-Apr	0500-1700	12	0500-1700	12	4.53	7.13	37.8%
10-Apr	2000-0800	12	2230-0630	8	7	2.93	58.3%
18-Apr	0500-1700	12	0500-1700	12	11.92	0	99.3%
24-Apr	2000-0800	12	2020-0800	11.66	10.78	0.6	89.8%
2-May	0500-1700	12	0630-1500	8.5	7.02	4.98	58.5%
8-May	2000-0800	12	2000-0750	11.83	9.05	2.75	75.4%
16-May	0500-1700	12	0500-1430	9.5	7.8	2.95	65.0%
22-May	1900-0800	13	1940-0800	12.66	7.27	4.9	55.9%
30-May	0700-1900	12	0700-1715	10.25	8.47	1.55	70.6%
5-Jun	2100-0800	11	2120-0720	10	9.6	0.32	87.3%
13-Jun	0500-1900	14	0500-1820	13.33	11.75	1.58	83.9%
20-Jun	0500-1700	12	0700-1830	11.5	9.23	2.27	76.9%

Run-7 APEX average availability: 72% (more precise accounting)

Run-7 Operations time at store : 49 %

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

Run-7 overview

<http://www.c-ad.bnl.gov/APEX/APEX2007/>

APEX Sessions	APEX elogs	APEX Results
April 4, 2007 Schedule	elog	Summary nonlinear-chrom
April 10-11, 2007 Schedule	elog1 elog2	Summary nonlinear-chrom transition-instability beam-beam-TF
April 18, 2007 Schedule	elog	Summary Beta-squeeze Orbit-response-matrix
April 24-25 Schedule	elog	Summary nonlinear-chrom IBS-lattice-inj beam-beam-wires
May 2 Schedule	elog1 elog2	Summary energy-loss nonlinear-chrom beam-based-align IBS-lattice-ramp
May 8-9 Schedule	elog1 elog2	Summary nonlinear-chrom Au-77 beam-beam-wires
May 16 Schedule	elog	Summary beam-based-align tune-drift-1 tune-drift-2
May 22-23 Schedule Schedule-2	elog	Summary near-integer-WP IBS-lattice nonlinear-chrom
May 30 Schedule Schedule-2 Schedule-3	elog	Summary near-integer-WP Repeatability
June 5-6 Schedule Schedule-2	elog	Summary energy-loss injection-drifts repeatability transition-instability
June 13 Schedule	elog	Summary beta-squeeze IBS-lattice energy-loss Repeatability
June 20 Schedule	elog1 elog2	Summary beam-beam-wires IBS-lattice PS-common-noise

12 sessions of APEX in Run-8

APEX Run-7

Studies completed in Run-7:

IBS lattice 1A

Beta* squeeze $\rightarrow 0.65\text{m}$ 0A

Near integer working point 1A

Correction of injection drifts 0A

Orbit Response Matrix 0A

Beta beat measurement, correction 0A

Gradient error correction 0A

Beam based alignment 0A

Nonlinear chromaticity 0A

Transition instability 0A

Repeatability 0A

PS common noise 0A

Ramp replay 0A

Noise ramps 0A

Beam-beam wires 1A

Energy loss from synch rad 2B

Gold 77 in RHIC 2B

Tungsten foil 0A

Planned – IMHO important - but not done or completed:

Schottky developments (0A), chromaticity feedback (0A) , triplet oscillations with beam (0A)

Run-7 studies - 1

Exp. No.	Exp. Title	Spokesperson	Priority	Recommended	Requested	Scheduled
05-18	Suppression of transverse IBS	V. Litvinenko	1-A	4	15	23
05-27	Intrabeam scattering coupling dependence	J. Wei	1-A	6	6	2.5
05-33	Dipole Power Supply Balancing	P. Cameron, C. Schultheiss	0-B	parasitic	4	0
05-38	BPM intensity measurement study	R. Michnoff, T.	0-A	parasitic		0
06-09	2/3 resonance measurement and correction at store	Y. Luo	1-B	4	8	0
06-11	Comparison of Schottky tunes and tune spread measurements to PLL and Artus measurements	K Brown	0-A	parasitic	8	0
06-31	RHIC Orbit Response Matrix at Store	T. Satogata	0-A	3	3	4
05-08	Surviving electrons in gaps	A. Drees	1-A	6	12	0
06-02	Measure DA using AC dipole	M. Bai, F. Pilat	1-A	6	12	0
06-05	Integration and Calibration of LHC Lumimonitor	A. Drees	2-A	parasitic		0
06-12	Non-linear chromaticity measurements	K. Brown	1-D		8	0
06-25	IPM-BBQ coupling measurements	R. Connolly	0-A	1	2	0
07-01	Test of near-integer working point	C. Montag	1-A	4	12	8
07-02	Linear Gradient Error Correction using AC dipole	M. Bai	0-A	2	4	2

Run-7 studies - 2

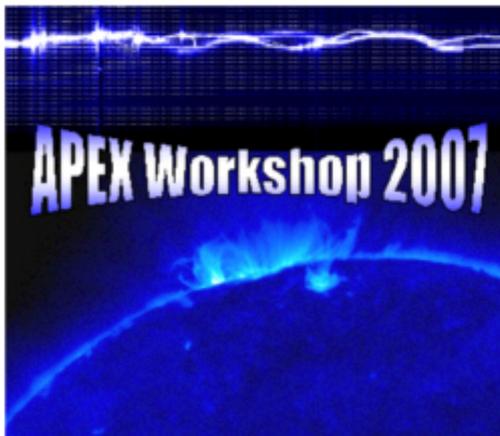
07-04	Vertical synchrotron coupling in AGS	W. W. MacKay	1-B	8	16	0
07-05	Beam Based Alignment	J. Niedziela, T.	0-A	2	2	6
07-06	Nonlinear chromaticity correction with off-momentum tune response matrix	Y. Luo	0-A	6	6	13.5
07-07	Effect of parallel wire-lens on Au beam	W. Fischer	1-A	4	8	11
07-08	Beta-Beat & Dispersion Beat Correction	R. Calaga	0-A	4	4	9
07-09	High intensity Au beams	S.Y. Zhang, H. Huang, H.C.	1-A	4	4	0
07-10	Au beam emittance growth at the injection and ramp	S.Y. Zhang, V. Ptitsyn, R.	1-A	4	4	0
07-11	Tune Ripple Measurements	K. Brown		2	2	1.5
07-12	Au beam intensity lifetime, emittance growth vs. collisions	S.Y. Zhang, V. Ptitsyn		2	2	0
07-13	Test of thermo-acoustic oscillations at triplets	C. Montag, J. Tuozzolo	0-A	1		0
07-14	Skew Chromaticity IV	S. Tepikian	1-B	3	3	0
07-15	Heavy-ion beam profile measurement with the carbon CNI polarimeter.	A. Zelenski, H. Huang	1-B	1	1	0
07-16	Synchrotron radiation suppression	W. Fischer	2-B	3	9	11
07-17	High frequency transverse BTF	M. Blaskiewicz	1-A	parasitic	9	0

Run-7 studies - 3

07-18	Study of possible Cooling of Au 77+ in AGS	D. Trbojevic	2-B	2	4	3
07-19	Common Mode Noise Measurement	C. Schultheiss	0-A	2	2	3
07-20	DX and D0 Contribution to beam noise.	C. Schultheiss	0-A	4	4	0
07-21	Test of optics with beta* < 0.80m	F. Pilat	0-A	4	12	6.5
07-22	Transition Instability Study	V. Ptitsyn, J. Wei	0-A	6	6	7
07-23 L	Recombination monitor for RHICII	P. Cameron	1-C	4	4	0
07-24	Sources of 10Hz tune ripple	C. Montag, T.			3	0
07-25	Chromaticity Feedback	P. Cameron, A.	0-A	3	3	1
07-26	Q' measurement via continuous head-tail analysis	P. Cameron	1-A	2	4	0
07-27	Q' measurement via RF phase modulation	P. Cameron	1-B	2	4	0
07-28	Emittance measurement via Quadrupole Transfer Function	P. Cameron	1-C	parasitic		0
07-29	Phase-locked beam-beam transfer function for luminosity optimization	P. Cameron, A. Drees	0-A	parasitic		4
07-31	Disengage Replay Ramping mode	A. Marusic	0-A			1
07-32	Noise Ramps	P. Cameron	0-A			0
07-33	Tune and chromaticity drift at injection	A. Marusic, W.	0-A			5.5
07-34	Tungstaen stripping foil	N. Tsoupas	0-A	parasitic		0
07-35	RHIC Repeatability	V. Ptitsyn, V.	0-A	1h/week	1h/week	3

APEX Program action items

- ❖ Reviewed and updated **status of studies** from Run-5, Run-6 and Run-7 – spokespersons need to confirm on <http://www.c-ad.bnl.gov/BeamEx/>
- ❖ For studies from **Run-5 and Run-6** (and earlier) need to be **resubmitted** – otherwise they will by default be closed
- ❖ **RESULT** field need to be provided by spokespersons (paper or deliverable) If the studies was not successful, the reason should be recorded as well. I will edit it into the proposal tracking web page.
- ❖ APEX Priority criteria works well
- ❖ Need to close gap between requested time, recommended time and the time that it really takes to get the study done



APEX Workshop 2007

November 1-2, 2007

Building 490, BNL

Overall Agenda

[Steering Committee](#)

[APEX Run-8 Webpage](#)

Thursday November 1 st -AM Opening Session 9:00-12:00am	Friday November 2 nd AM Experiments with P-P 9:00-12:00am
Thursday November 1 st - PM Experiments with d-Au 1:30-5:00pm	Friday November 2 nd - PM Instrumentation, diagnostics, developments 1:30-5:00pm

<http://www.c-ad.bnl.gov/APEX/APEXWorkshop2007/>

Preparation for Run-7

Start RHIC cool-down

Nov 1st

Start RHIC Physics

Dec 1st

Deadline APEX proposals

November 15

AEAC Committee

ASAP > November 15 < December 1st

08-01	<u>Electron cloud location</u>	W. Fischer	Proposed
08-02	<u>Au31+ in AGS</u>	W. Fischer	Proposed
08-03	<u>Transition crossing longitudinal matching as a function of RF</u>	N. Abreu, M. Bai, M. Blaskiewicz	Proposed
08-04	<u>Transverse Impedance Localization</u>	Mike Blaskiewicz	Proposed
08-05	<u>Spin Echo and Resonance Interference</u>	M. Bai	Proposed
08-06	<u>measuring and modeling linear and nonlinear chromaticities at RHIC store</u>	Yun Luo	Proposed

Restart **APEX Meetings** every Friday 11am LCR after the Workshop (starting November 9)

Run-7 APEX page:

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

AP Experiment Categories

Class:

- 0: likely to immediately benefit RHIC machine performance, or crucial to RHIC hardware decision making
- 1: directly benefiting RHIC machine performance
- 2: benefiting general accelerator community

Priority:

- A: MUST DO
- B: Recommended
- C: Considered
- D: Declined

Priority is assigned by AEAC Committee

The AEAC will NOT distribute a written record of deliberations, only the final outcome. However it will be available to discuss the outcome if requested by the experiment spokespersons