

MSU ATLAS

Part II.

1. Single Top
2. AGL-T2
3. Budget, personnel plans
4. Overall conclusions

1. ATLAS Single Top, last year

analysis framework development

used experience to implement the entire DØ analysis package to work with the TopView package

in use for the MSU CSC note production

trigger analysis

Ryan is in charge of the Single Top Trigger

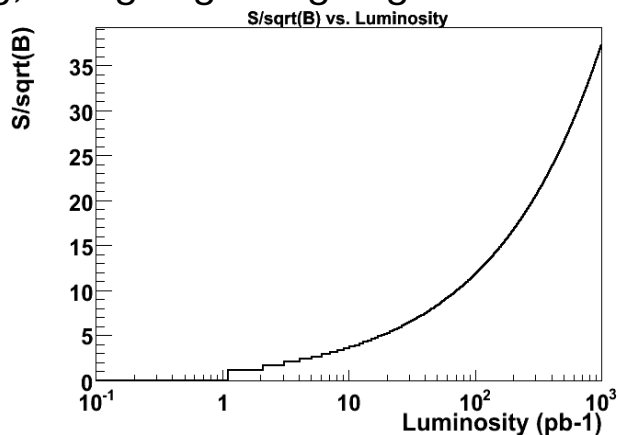
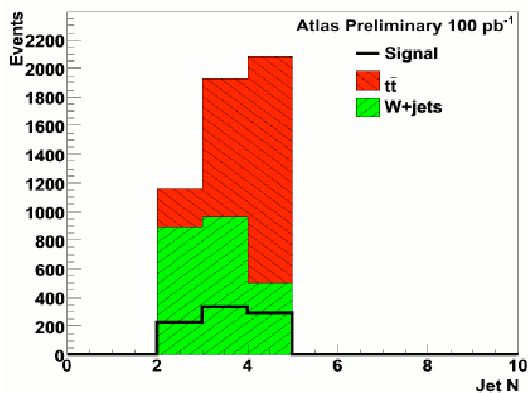
studies of ORing necessary to optimize trigger

CSC Note exercise

Ryan, Holzbauer, Pope, Schwienhorst, authors

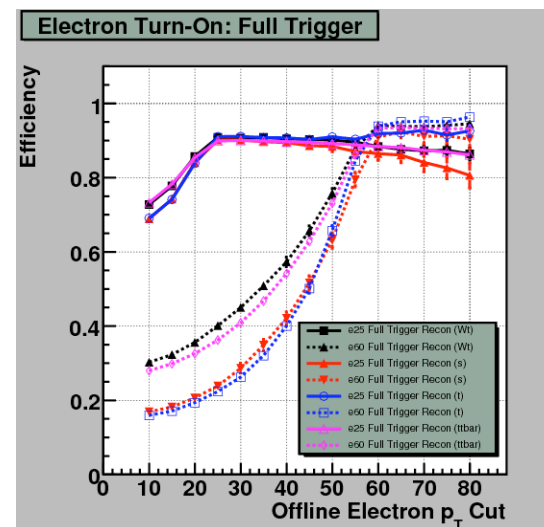
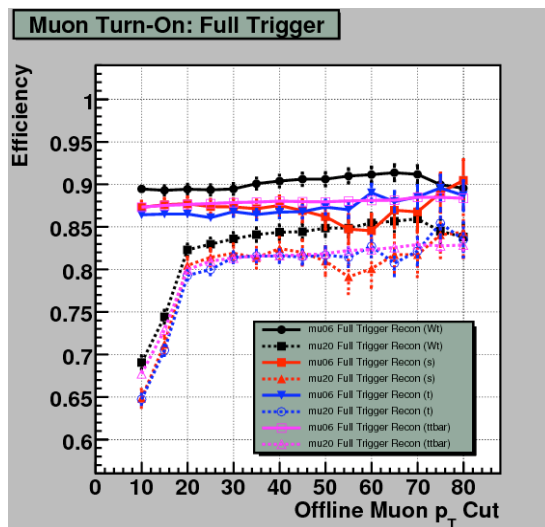
in charge of the Single Top prospect for early data collection

Holzbauer, Pope, et al. are studying single top observation significance in early running for CSC note...ongoing, and going and going...



Concentrating on incremental inclusion of systematics

Ryan et al. studying trigger efficiencies and turn-on distributions



ATLAS Single Top, next year

analysis framework development, cont.

Adopt to the DPD, AthenaROOTAccess model

Hauser has extensive experience in large-scale analysis package development - called on for advice within ATLAS

trigger analysis

Ryan will continue to be in charge of the Single Top Trigger

Trigger commissioning should involve everyone

Data Analysis

Extend D0 experience in signal extraction, background estimation, multivariate techniques, etc.

T3 use, on-campus

Would like to be involved in Single Top MC production and/or DⁿPD production

DPD implementation

extend MC production, for example to include polarization effects

Grant-Supported Staff: Single Top

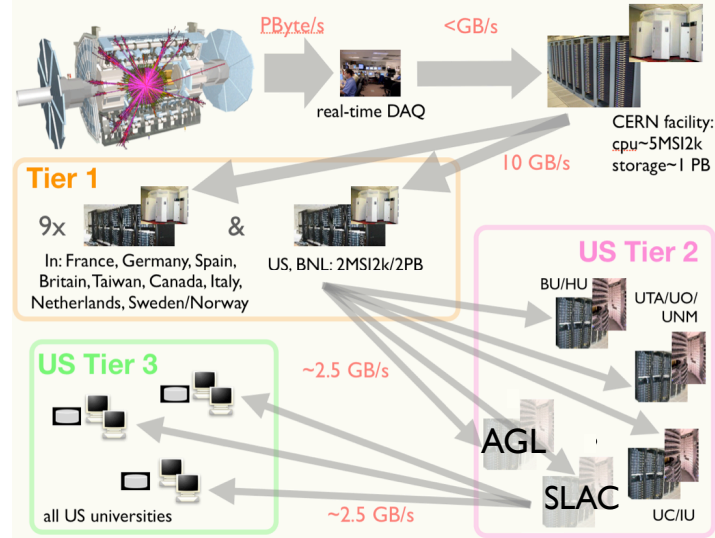
Person	RF this year	RF next year	Single Top Tasks	
			this year	next year
Abolins	0.2	0.2	trigger studies	trigger commissioning
Brock	0.2	0.2	trigger studies, doc, code	trigger commissioning, data analysis, MC? DPD?
Linnemann	0	0.1		trigger commissioning, data analysis
Pope	0.35	0.35	trigger studies, MC analysis	trigger commissioning, data analysis, MC? DPD?
Schwienhorst	0.45	0.38	trigger studies, MC analysis	trigger commissioning, data analysis
Hauser	0.5	0.5	trigger studies, MC analysis	trigger commissioning, data analysis
Ryan	0.80	0.7	trigger studies, MC analysis	trigger commissioning, data analysis
Holzbauer	1.0	1.0	trigger studies, MC analysis	trigger commissioning, data analysis
Heim	1.0	0.5	MC studies	trigger commissioning, data analysis
new post doc		1.0		trigger commissioning, data analysis
new grad student		0.5		trigger commissioning, data analysis

2. Tier 2 Center, ATLAS

Collaboration with
University of Michigan

“ATLAS Great Lakes Tier 2
Center” (AGL-T2)

Shawn McKee (PI), U-M co- Director,
Brock, MSU-co-Director

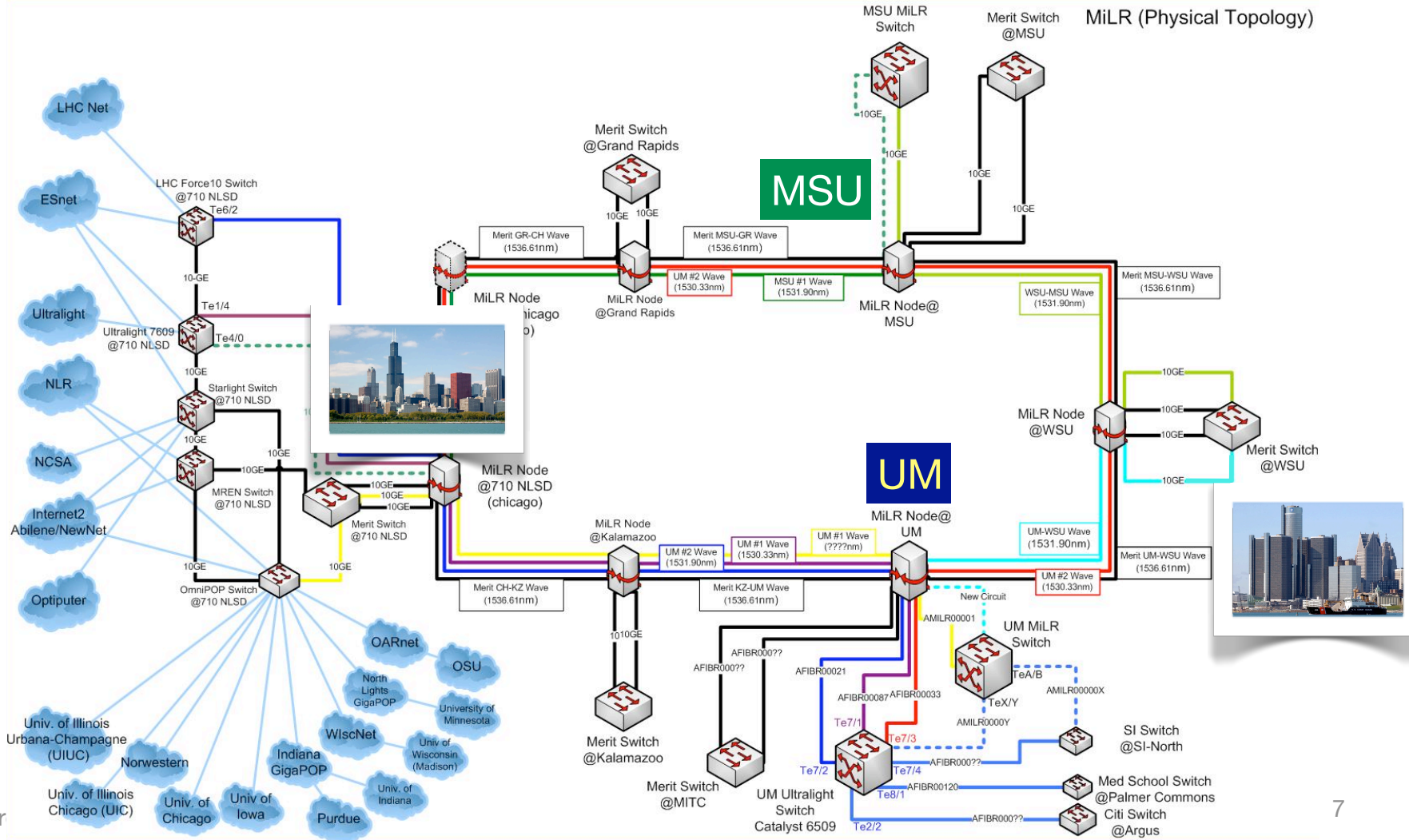


Brock



“it’s the network”

MI Research



Br

MSU commitment & project status

T2 project: \$3M over 5 years

MSU contributions: \$863k, equip & salary, 10Gbps wavelength

\$350k, CRAC & renovations

5 MSU racks running mid-December

54 nodes Intel Xeon 5355 (Dell Poweredge 1950) 2.67 GHz dual, quad core

(SPECint_2000: ~2178/cpu => ~17,424/node => 940k SPECint2000)

16GB RAM, 225,000GB storage in 5 units of MD1000's

going to exceed our commitment...

and break our heat budget, so upgrading our CRAC upgrade!

ultimately 20 rack slots @ 8.5kW/rack

	cpu MSI2k	disk PB	tape PB
The US Tier 1	4.8	2.9	1.8
Each US Tier 2	0.8	0.12	0
proposed AGL, 2010	2.9	1.05	0
proposed AGL, 2008	1.5	0.47	0

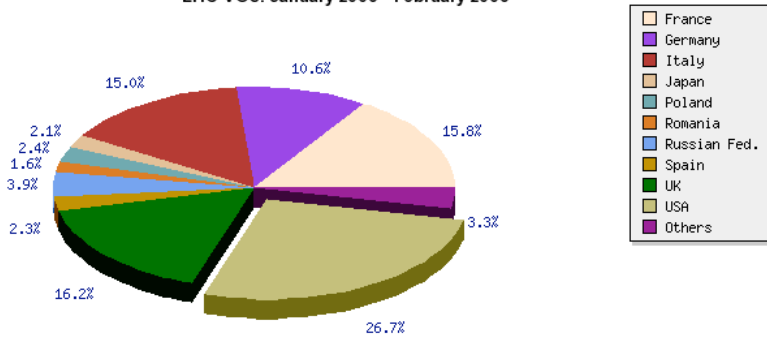


AGLtoday	~2	0.5	
MSUtoday	~1	0.225	

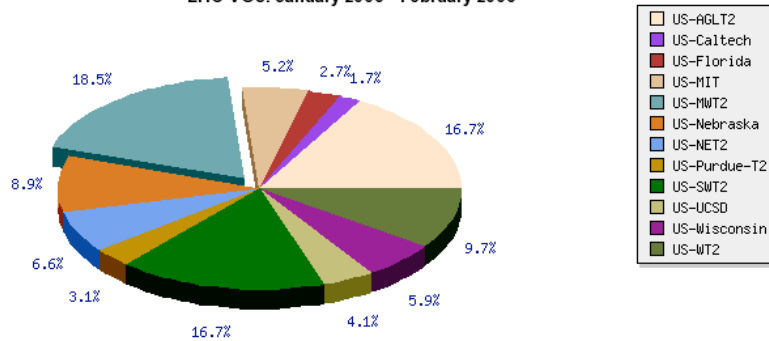
AGL-T2 quickly significant

EGEE report, from 1/1/08

COUNTRY_T2 Normalised CPU time per COUNTRY_T2
LHC VOs. January 2008 - February 2008

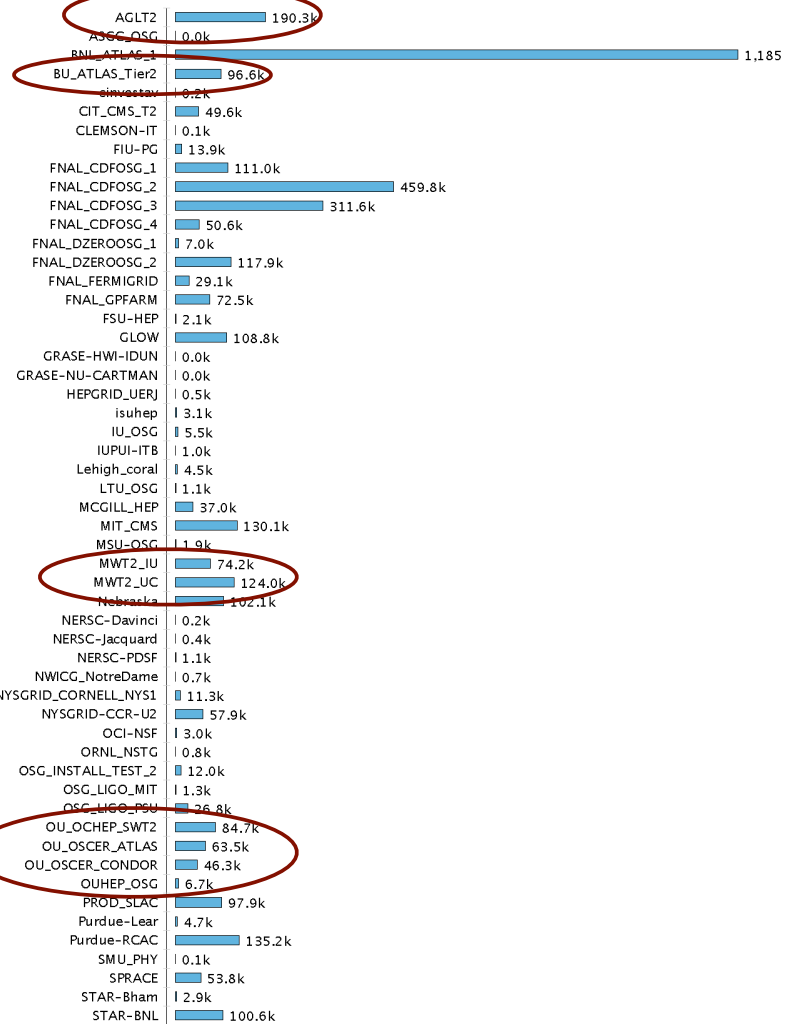


USA (Tier2) Normalised CPU time per TIER2
LHC VOs. January 2008 - February 2008



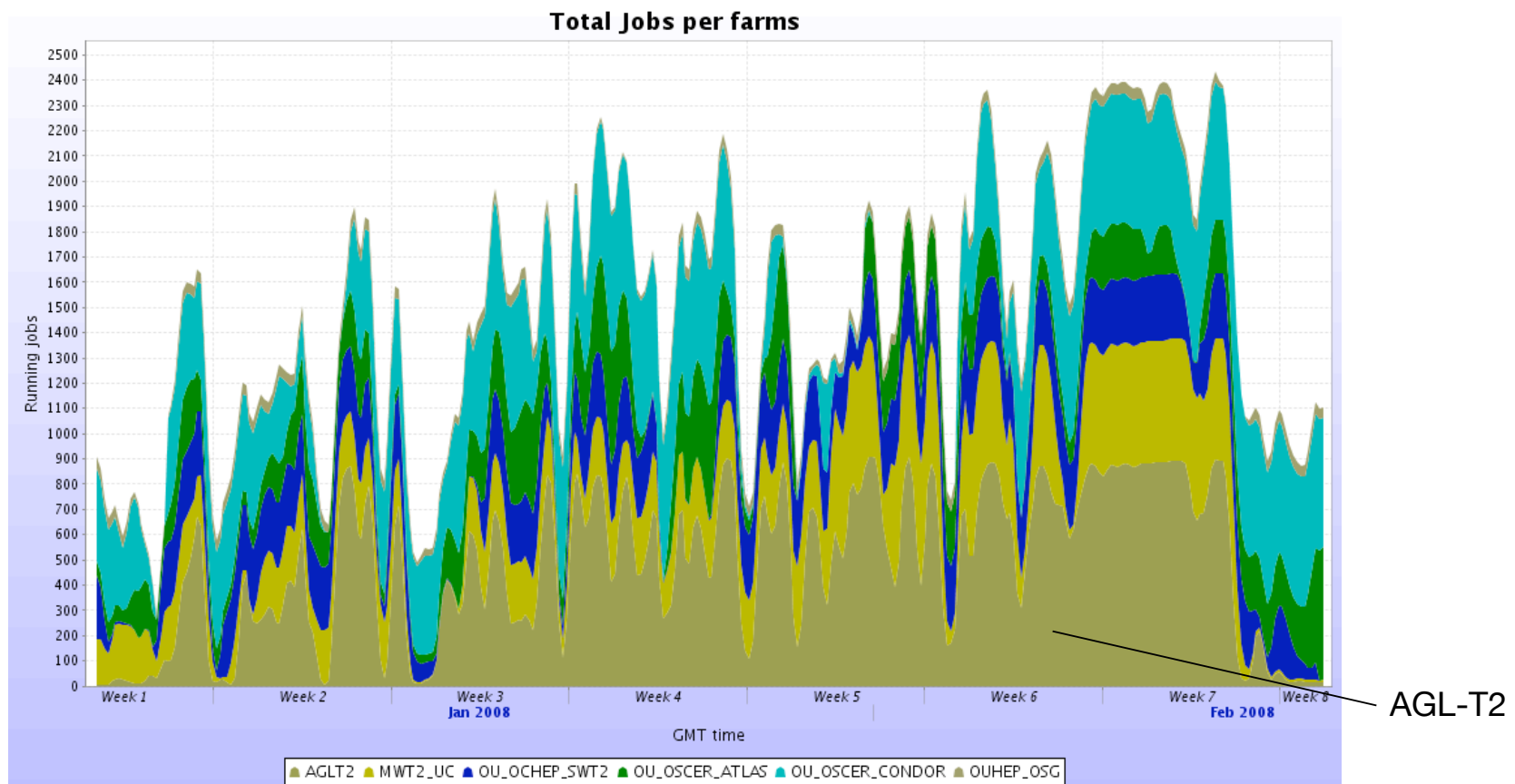
(C) CESSGA 'EGEE View': USA (Tier2) / normcpu / 2008:1-2008:2 / TIER2-SITE / lhc / LINES-LIN / 2008-02-18 08:28 UTC

Usage by Site (Job Count)



ATLAS T2's

Mona Lisa, since 1/1/08



AGL-T2 breakdown



USATLAS AGLT2 Report for Mon, 18 Feb 2008 11:34:03 -0500

Get Fresh Data



Last Sorted

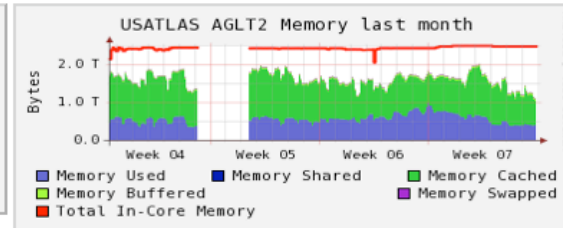
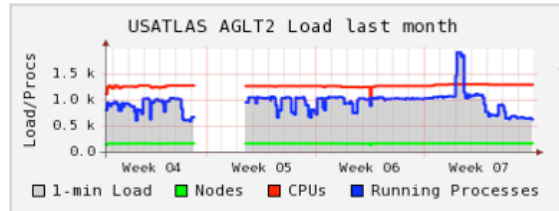
USATLAS AGLT2 >

USATLAS AGLT2 (2 sources) (tree view)

CPU's Total: **1294**
 Hosts up: **170**
 Hosts down: **1**

Avg Load (15, 5, 1m):
 44%, 44%, 44%

Localtime:
 2008-02-18 11:34

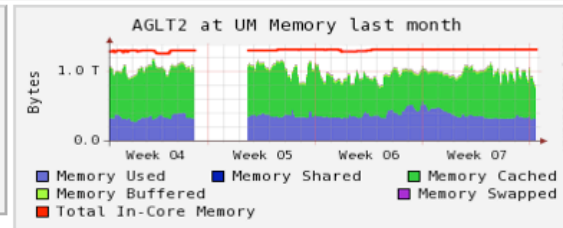
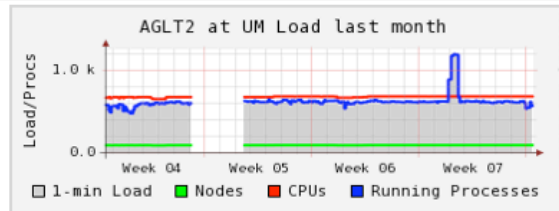


AGLT2 at UM (physical view)

CPU's Total: **684**
 Hosts up: **93**
 Hosts down: **0**

Avg Load (15, 5, 1m):
 83%, 83%, 83%

Localtime:
 2008-02-18 11:34

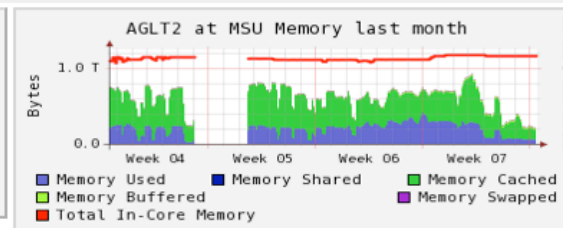
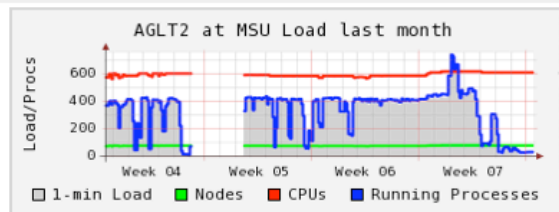


AGLT2 at MSU (physical view)

CPU's Total: **610**
 Hosts up: **77**
 Hosts down: **1**

Avg Load (15, 5, 1m):
 0%, 0%, 0%

Localtime:
 2008-02-18 11:33



Snapshot of the USATLAS AGLT2 | [Legend](#)

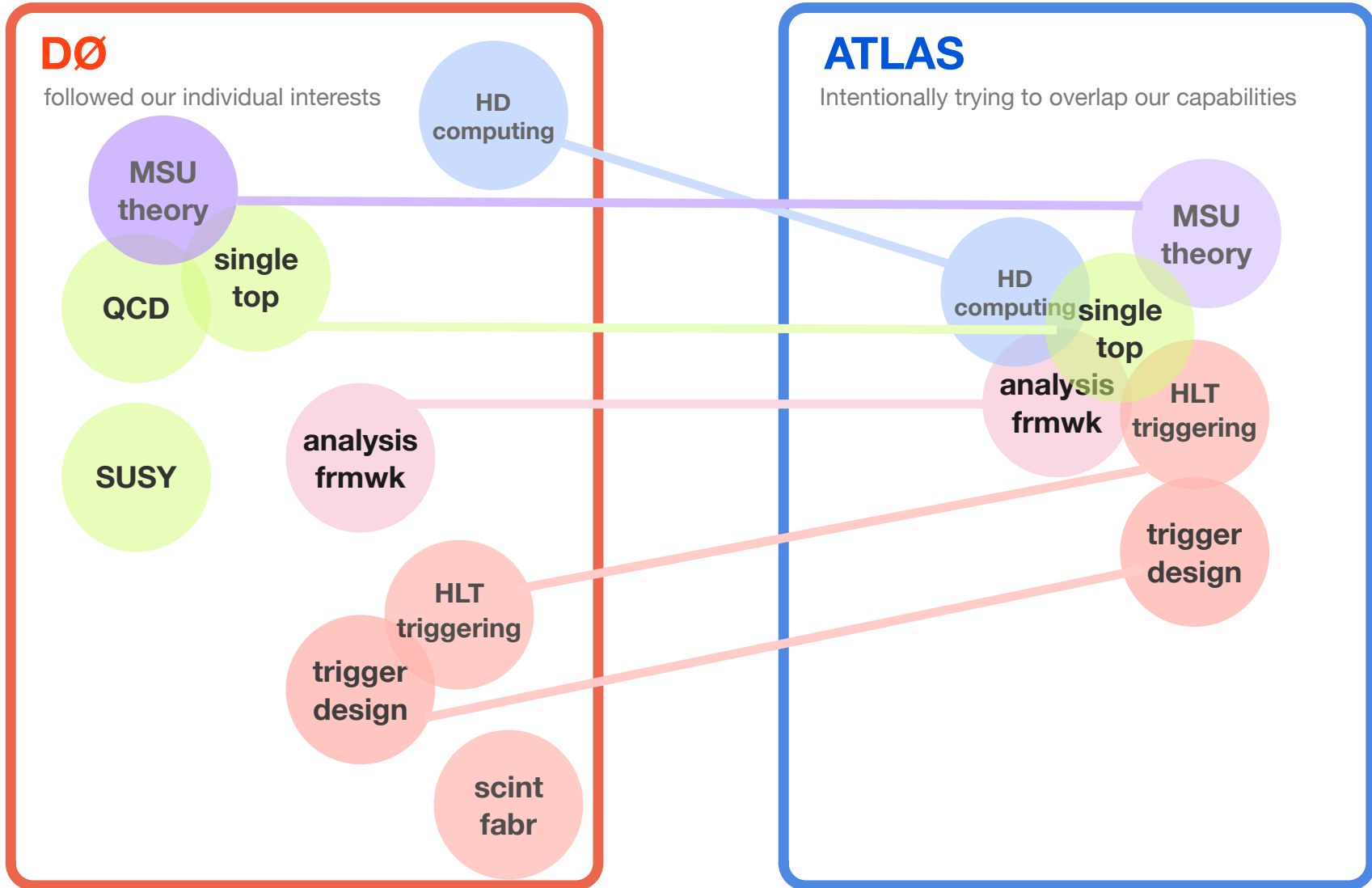
Grant-Supported Staff: AGL-T2

Person	RF this year	RF next year	AGL-T2 Tasks	
			this year	next year
Brock	0.3	0.2	management, construction	management, use case implementation, T3 use for Single Top
Rockwell**	0.5*	0.5	T2 systems management	T2 systems management
Pope	0	0.1		T3 use for trigger studies and single top
Schwienhorst	0	0.1		T3 use for trigger studies and single top
Heim		0.5	TBD	TBD

* In writeup wrote: "100%" RF, but 6 months supported. This is meant to be the same statement! Rockwell is half-supported by our grant, half by all other HEPT and HTPE groups.

** Does not include Laurens, who is MSU-ATLAS internally supported.

our ATLAS strategy



3. grant budget, personnel

personnel requirements, year 1: 2008-2009

short-term (**y1**, counting people)

DØ:

NOW

YEAR 1

5 GS

5 GS

2 PD

2 PD

fractions, 2 EE

fractions, 2 EE

fraction sys mngr.

fraction sys mngr.

ATLAS:

NOW

YEAR 1

1 GS*

3 GS

1 RP

1 RP

1 grantPD

2 grantPD

1 projectPD

1 projectPD

1 projectEE

1 projectEE

fraction sys mngr.

fraction sys mngr.

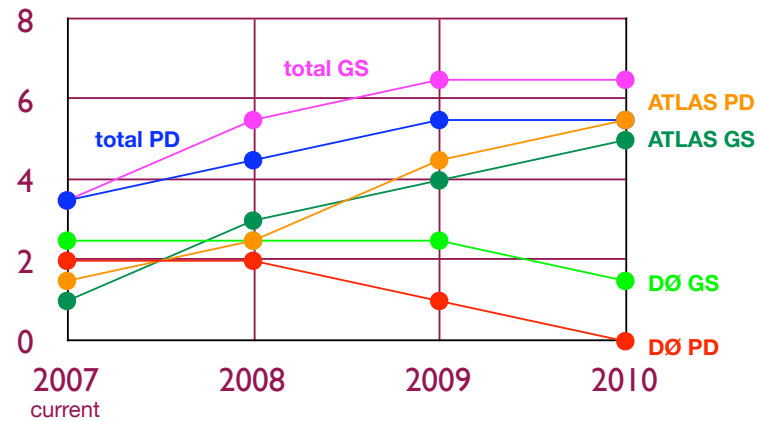
proposal: personnel evolution

category	now DØ + ATLAS = total	y1 (08-09) DØ + ATLAS = total	y2 (09-10) DØ + ATLAS = total	y3 (10-11) DØ + ATLAS = total
research faculty & post docs	2 + 1.5 = 3.5	2 + 2.5 = 4.5	1 + 4.5 = 5.5	0 + 5.5 = 5.5
graduate students	2.5 + 1 = 3.5	2.5 + 3 = 5.5	2.5 + 4 = 6.5	1.5 + 5 = 6.5



real DØ-ATLAS mix uncertain!

Notes: • original plans made assuming Run II would end in 2008!



Michigan State University (Abolins/Brock)

TABLE 1
NSF-PHY University Program Proposal Information
for last year (FY07)

Proposal Title: Investigations in High Energy Physics

Institution: Michigan State University

Principal Investigator: Abolins and Brock

Funds Spent for LHC– Last Year: \$423,598

a) From present award: \$423,598

b) Subtotal for Travel: \$65,000

c) From LHC Research (Ops) program: \$258,805

% Physics Research Time To Be Spent on LHC Experiments

Type of Position	Name	LHC Activity (% Physics Research Time)			#months Funded by this proposal (Other)	Faculty Advisor	Comments
		TDAQ	Single top	MSU Tier 2			
Faculty	M. Abolins	20	20		2		30% on ATLAS Speakers Comm.
	R. Brock		20	30	2		50% on DØ, AGL, single top
	J. Linnemann	0	0		2		DØ and Milagro currently
	B. Pope	35	35		2		TDAQ, single top
	R. Schwienhorst	5	45		2		Monte Carlo and trigger studies
Res. Assoc. Prof.	R. Hauser	50	50		6(6)		M&O & project support from US ATLAS
Postdoc	P. Ryan	20	80		12	Pope	
	A. DiMattia	100			0(12)	Abolins	M&O support from US ATLAS
Systems manager	T. Rockwell			100	6(6)	Brock	manages DØ, ATLAS Tier 2 clusters, partial support rest of HEP
E.Engineer	Y. Ermoline	100			0(12)	Abolins	E.E. M&O support from US ATLAS
E.Engineer	P. Laurens			50	0(12)	Brock	E.E. DØ Operations and university (Tier 2) support
Mech/elec tech	M. Nila			50	0(12)	Brock	Hardware, mechanical, university (Tier 2) supported
bookkeeper	B. Wenzlick	10			2(10)	Pope	department and all HEP supported
Grad Stud	J. Holzbauer		100		12	Pope	female student Single Top physics
Undergrads	D. Larese		100		3(_)	Brock	summer at CERN and during current spring term
	E. Johnson		100		2(_)	Schwienhorst	Current spring term

Michigan State University (Abolins/Brock)

TABLE 2
NSF-PHY University Program Proposal Information
Year One of Proposal

Proposal Title: Investigations in High Energy Physics

Institution: Michigan State University

Principal Investigator: Abolins and Brock

Funds Requested for LHC– First Year: \$612,190

a) From present proposal: \$612,190

b) Subtotal for Travel: \$84,000

c) From LHC Research (Ops) program: \$294,844

% Physics Research Time To Be Spent on LHC Experiment

Type of Position	Name	LHC Activity (% Physics Research Time)				#months Funded by this proposal (Other)	Faculty Advisor	Comments
		TDAQ	Single top	MSU Tier 2	Adm.			
Faculty	M. Abolins	20	20		30	2		ATLAS speakers comm..
	R. Brock		20	30		2		50% on DØ, AGL, single top
	J. Linnemann	7	10			2		TDAQ, single top
	B. Pope	30	35	10	8	2		TDAQ, single top
	R. Schwienhorst	10	38	10		2		Trigger commissioning, analysis planning, early data analysis
Res. Assoc. Prof.	R. Hauser	50	50			6(6)		M&O & project support from US ATLAS
Postdoc	P. Ryan	30	70			12	Pope	
	A. DiMattia	100				0(12)	Abolins	M&O support from US ATLAS
	new postdoc		100			12		
Systems manager	T. Rockwell			50		6(6)	Brock	manages DØ, ATLAS Tier 2 clusters, partial support rest of HEP
E.Engineer	Y. Ermoline	100				0(12)	Abolins	E.E. M&O support from US ATLAS
E.Engineer	P. Laurens			50		0(12)	Brock	E.E. DØ Operations and university (Tier 2) support
Mech/elec tech	M. Nila			50		0(12)	Brock	Hardware, mechanical, university (Tier 2) supported
Bookkeep.	B. Wenzlick	10				2(10)	Pope	department and all HEP supported
Grad Stud	J. Holzbauer		100			12	Pope	female student Single Top physics
	S. Heim		50	50		12	Schwienhorst	new female student
	new	50	50					unnamed
undergrad	2							

Financial: Current and Year 1

Michigan State University (Abolins/Brock)

Table 3 Grant Financial data, current and proposed.

budget category	current grant, year 3	fraction ATLAS	total ATLAS	proposal, year 1	fraction ATLAS	total ATLAS
faculty	\$127,433	2.92 fte	\$77,369	\$131,256	2.92 fte	\$79,690
post docs	\$192,135	1.5	\$92,625	\$252,032	2.5	\$148,009
other professional	\$21,297	0.6 fte	\$12,778	\$21,563	0.6 fte	\$12,938
GS	\$71,328	1	\$18,000	\$107,328	3	\$54,000
US	\$0	0	\$0	\$0	0	\$0
clerical	\$14,664	0.15	\$5,866	\$15,200	0.15	\$6,080
equipment	\$25,000	0.5	\$12,500	\$25,000	0.5	\$12,500
travel	\$108,699	0.6	\$65,219	\$140,000	0.6	\$84,000
M&S	\$10,000	0.5	\$5,000	\$10,000	0.5	\$5,000
pub	\$200	0.5	\$100	\$200	0.5	\$100
computer services	\$12,000	0.5	\$6,000	\$12,000	0.5	\$6,000
other, communications, GS tuition/fees	\$37,747	0.5	\$12,499	\$58,485	0.5	\$31,537
total direct	\$682,463		\$340,522	\$866,598		\$494,126
total indirect	\$163,206		\$83,076	\$205,690		\$118,063
TOTAL	\$845,670		\$423,598	\$1,072,288		\$612,190
fraction	100%		50%	100%		57%

4. conclusions

Trying very hard to do
both DØ and ATLAS

**Conscious strategy: leverage experience, overlap
expertise**

(triggering, single top, HD computing, and hopefully electronics design/fabrication)

ATLAS will have to take priority if \$ are sparse

*But, we **have** to increase our presence at CERN*

postdocs and students

extra information

great post docs

We have attracted great post docs on DØ

Reiner Hauser

Roger Moore

Dugan O'Neil

Dylan Casey

Reinhard Schwienhorst

Bob Kehoe

and now

Ike Hall, Jim Kraus, and Patrick Ryan

At least 2 at a time

convenors of physics, hardware, commissioning, and computing groups

conclusion

critical mass

is...well, critical!

DØ: traditionally, ≥ 2 PD always on both
proposal written with 2008 end-of-run in mind

ATLAS: not strong enough

must increase PD and GS component

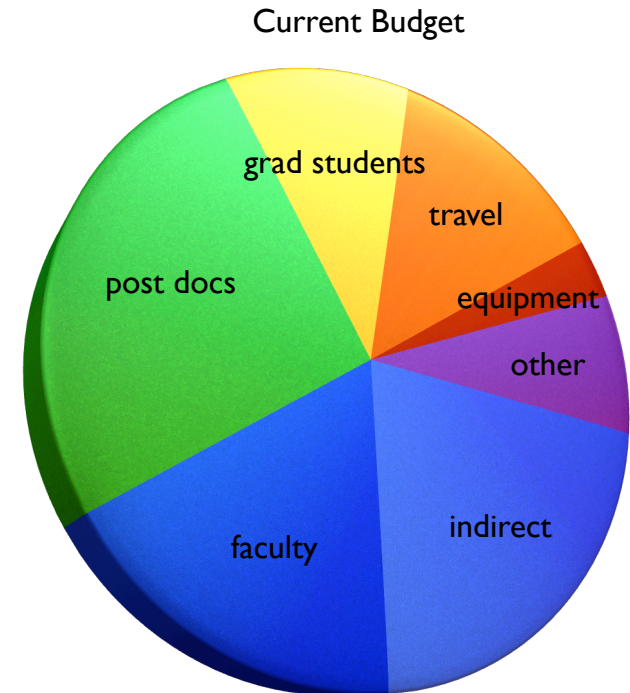
No increase in PD strength

will eliminate us from DØ

Current Budget, 5/1/05-4/30/08

summary, current year:

category	unit	total (k)
faculty	5*2 months	\$127.1
post docs	3.5	\$192.1
grad students	3.5	\$80.0
travel		\$100.0
equipment		\$25.0
other	materials, tuition, computer services	\$59.7
indirect	@26% off-campus	\$163.0
total		\$845.7
per faculty		\$169.1



Current Budget, 5/1/05-4/30/08

details

A. SENIOR PERSONNEL: PI/PD, Co-PI'S, Faculty and Other Senior Associates					NSF Funded			Funds
(List each separately with title, A.7. show number in brackets)					Person-months			Requested By
O.	First Name	M	Last Name	Title	CAL	ACAD	SUMR	Proposer
1.	Maris	X	Abolins	Professor	0.00	0.00	2.00	
2.	Raymond	X	Brock	Professor	0.00	0.00	2.00	
3.	James	X	Linnemann	Professor	0.00	0.00	2.00	
4.	Bernard	X	Pope	Professor	0.00	0.00	2.00	
5.	Reinhard	X	Schwienhorst	Professor	0.00	0.00	2.00	
(5) TOTAL SENIOR PERSONNEL (1-6)								\$127,433
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)								
1.	(3.5) POST DOCTORAL ASSOCIATES				42.00	0.00	0.00	\$192,135
2.	(1) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)				6.00	0.00	0.00	\$21,297
3.	(3.5) GRADUATE STUDENTS							\$80,028
4.	(0) UNDERGRADUATE STUDENTS							\$0
5.	(1) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY) bookkeeper							\$14,664
6.	(0) OTHER							\$0
TOTAL SALARIES AND WAGES (A+B)								\$435,557
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)								\$61,961
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)								\$497,518
D. PERMANENT EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000)								
	cluster computer equipment			\$25,000				
TOTAL EQUIPMENT								\$25,000
E. TRAVEL								
	1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							\$100,000
	2. FOREIGN							\$0
F. PARTICIPANT SUPPORT COSTS								
	1. STIPENDS			\$0				
	2. TRAVEL			\$0				
	3. SUBSISTENCE			\$0				
	4. OTHER			\$0				
	(0) TOTAL NUMBER OF PARTICIPANTS							\$0
G. OTHER DIRECT COSTS								
	1. MATERIALS AND SUPPLIES							\$10,000
	2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION							\$200
	3. CONSULTANT SERVICES							\$0
	4. COMPUTERS SERVICES							\$12,000
	5. SUBAWARDS							\$0
	6. OTHER communications + grad student tuition/fees							\$37,747
TOTAL OTHER DIRECT COSTS								\$59,947
H. TOTAL DIRECT COSTS (A THROUGH G)								\$682,464
I. INDIRECT COSTS (SPECIFY RATE AND BASE)								
	Name of indirect cost item			Amount	Rate			
	all but equipment and tuition			\$627,718	26.00%	163207		
TOTAL INDIRECT COSTS								\$163,207
J. TOTAL DIRECT AND INDIRECT COSTS (H+I)								\$845,671
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.)								\$0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)								\$845,671
M. COST SHARING: PROPOSED LEVEL								\$0
AGREED LEVEL IF DIFFERENT \$								\$0
PI/PD NAME					DATE			
					FOR NSF USE ONLY			

grant history

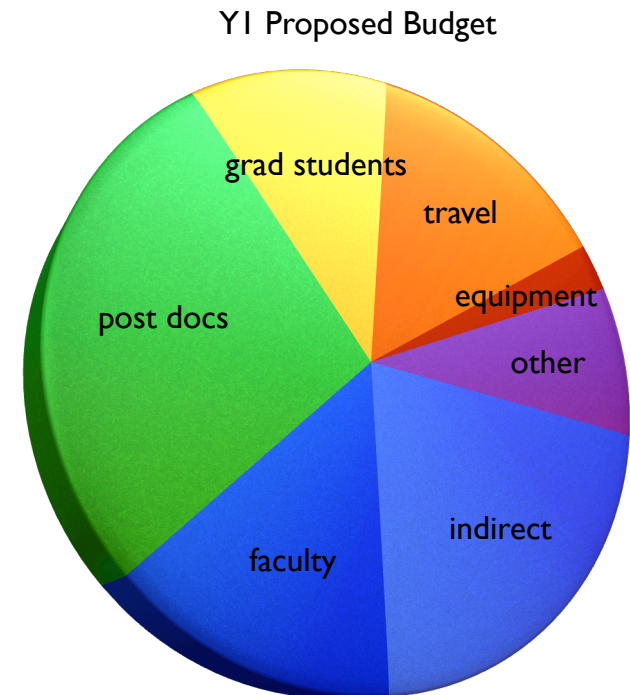
For the previous 9 years:

year	award (\$k)	supplemental	comments
5/99-4/00	\$750.0		
5/00-4/01	\$790.0		
5/01-4/02	\$830.0		
5/02-4/03	\$730.0		famous messy year in PHY
5/03-4/04	\$730.0	\$100.0	supplements to “make us whole”
5/04-4/05	\$730.0	\$100.0	
5/05-4/06	\$830.0		
5/06-4/07	\$845.0		
5/07-4/08	\$845.0		
5/08-4/09	\$1,072.0		<i>inflation since 2002, about \$1020k</i>

Proposal, 5/1/08-4/30/09

summary, year 1:

category	unit	total (k)
faculty	5*2 months	\$131.3
post docs	4.5	\$252.0
grad students	5.5	\$107.3
travel		\$140.0
equipment		\$25.0
other	materials, tuition, computer services	\$80.5
indirect	@26% off-campus	\$205.7
total		\$1,072.3
per faculty		\$214.5



personnel requirements, year 3: 2010-2011

short-term (**y3**, counting people)

DØ:

NOW

YEAR 3

5 GS

1-2 GS

2 PD

0 PD

fractions, 2 EE

fractions, 2 EE

fraction sys mngr.

fraction sys mngr.

ATLAS:

NOW

YEAR 3

1 GS

5 GS

1 RP

1 RP

1 grantPD

4 grantPD

1 projectPD

1 projectPD

1 projectEE

1 projectEE

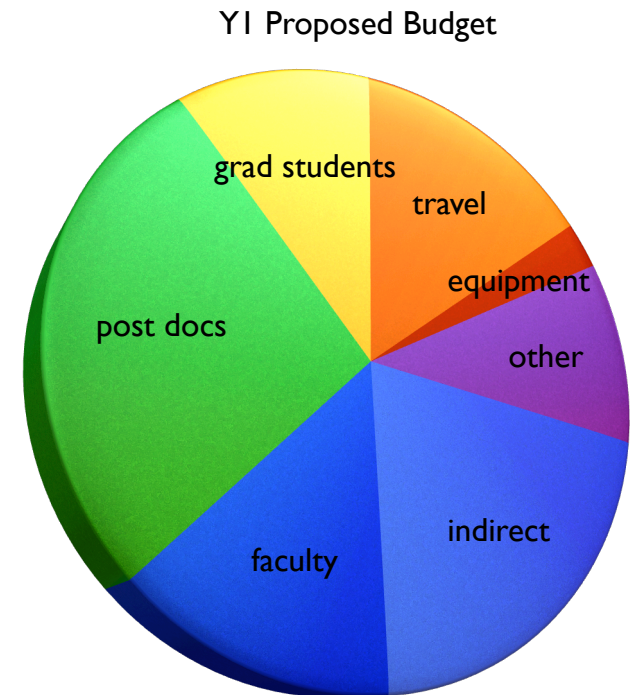
fraction sys mngr.

fraction sys mngr.

Proposal, 5/1/10-4/30/11

summary, year 3:

category	unit	total (k)
faculty	5*2 months	\$139.3
post docs	4.5	\$324.7
grad students	5.5	\$133.0
travel		\$140.0
equipment		\$25.0
other	materials, tuition, computer services	\$99.6
indirect	@26% off-campus	\$247.7
total		\$1,295.2
per faculty		\$259.0



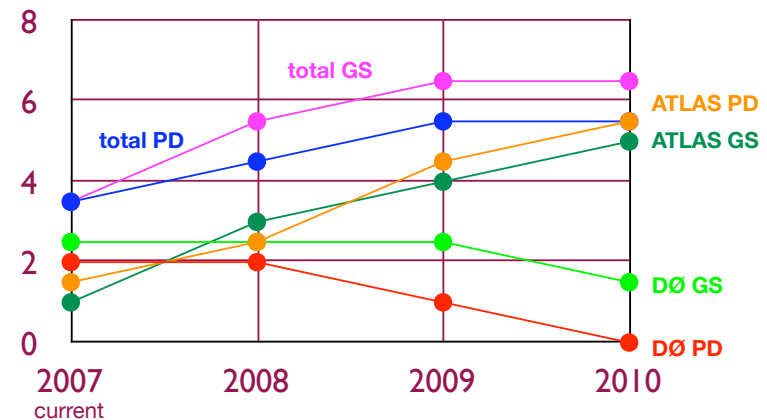
scenarios, increments

flat-flat

Our “post doc philosophy,” next 3 years:
incrementally reduce our post doc capability at FNAL
incrementally increase our post doc capability at ATLAS

so, $\Delta PD = +2$

and also $\Delta GS = +3$



Flat-flat:

define as “no fire” budget, this year, inflated:

would be \$870k, short of 1st year goal by ~\$200k

about = travel increment + 1 PD + 2 GS.

Grant-building kit based on the flat-flat (no-fire)

Based on the \$870k no-fire budget

Personnel increments:

+1 PD line for ATLAS:	9.5% increase, ~\$83k
+1 GS line for ATLAS:	4% increase, ~\$35k
+1 GS +1 PD lines for ATLAS:	13% increase, ~\$117k

Travel increase (\$100k is insufficient):

+\$40k:	6% increase, ~\$50k
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If flat flat

We would leave DØ **during year 1.**

Going...

from: 2 post docs & 3.5 students with responsibilities

to: 0 post docs and 0.5 students

EW top quark efforts would end

Faculty efforts:

Editorial boards, maybe shifts

DØ MC production would continue until obsolescence

Schwienhorst would supervise student w/French

a disaster

2002 budget in 2008

while trying to do two legitimate, priority programs
would be a disaster

The obvious question:

what would it take for us to be able to stay in DØ?

at least 1 new PD line, 1 new student line, travel

From the “kit”...

\$167k over the “no-fire” budget, ~20%

\$192k over year 3 of the current budget, ~23%

special challenges

Personnel:

COLA: U.S. based vs european based
fluctuating \$

MSU allowing us to adjust \$ salaries for european-based personnel

Other financial issues:

travel costs

Fermilab schedule

can a 2010 & a real Higgs effort be abandoned?

we don't have a solution to a 2010 run yet