1 Budget Justification -FY04 (4-1-04 to 3-31-05)

A.1-4. Four faculty supported for two summer months each to perform research full-time and to direct students. The summer commitments are:

(a) L. Cremaldi: BABAR 70%, CMS 30%, 05% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%, MUON 30%
(d) B. Quinn: D0 100%

(Academic year support, with reduced teaching loads, is provided by the University.)

A.6. Two months summer salary for Dr. David Sanders, Research Scientist/Computer System Manager. Dr. Sanders is supported 10 months by the physics department. He spends greater than 50% time on the UMHEP computing, RAID Arrays, supporting UMiss systems at SLAC, performing physics analyses. Two months support is requested so he can continue his support of BABAR (systems, RAID arrays, etc.), some software development for CMS, and bring up our D0/CMS computing. Sander’s also supports test beam operations at CERN for our group. In his absence for research purposes, the department pays a student for backup (13.2K per yr.). The Department contributes about 5 months of Dr. Sander’s salary, and with the student totals an in-kind contribution of $35K + 25.04%. fringe.

B.1 Three postdoctoral associate are supported full-time:

(a) J. Bauer: 100% BABAR
(b) H. Zhao: 100% BABAR
(c) R. Godang: 90% BABAR; 10% MUON

B.3 One graduate student, V. Eschenburg, is doing his dissertation in residence at SLAC and needs full support. One dissertation student, E. Aitala, is supported by the University and no support is requested for him. Aruniva Roy and Bashali Ray are working 50% department and 50% DOE, and will need future support upon full commitment to HEP.

B.4 Two undergraduate students receive hourly compensation to operate the high energy physics computer farm and assist in data analysis and detector construction.

C. Fringe benefit rate: 25.04% of salary for Senior Personnel and Post Doctoral Associates; 3% of salary and wages for undergraduate and graduate students.

(All salaries and wages and fringe benefits are consistent with guidelines established by the University.)
D. Permanent Equipment 12 dual processor CPU's ($1500 ea) will be purchased for the D0/CMS Linux Computer farm. A 3TB RAID array ($6K ea) will be networked to the farm and analysis work stations (BaBaR,D0,CMS) through a high speed switch ($1K).

Our RAID storage array at SLAC giving hardware problems- some component failures. We need to send out a spare and repair in house.

E.1 Domestic Travel (3 faculty, 1 research scientist, 3 postdocs, 1 student)
( All domestic travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations. )

BABAR:
(a) Two faculty for one summer months each at SLAC 6000
(b) Supplement for student for 12 months at SLAC 8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs 4500
(d) 3 student or postdoc to University from SLAC during academic year 3600
(e) Two physicists at two national meetings (DPF,IEEE) to present papers 4500
(f) Partial support for three faculty per two collaboration meetings. 4500

FERMILAB- D0/CMS
(a) 10 trips to Fermilab for physicists on D0, CMS to take shifts(D0), discuss top analysis(D0), detector fabrication(CMS), test beam(CMS) . 10000
(b) One physicist for 1 summer mo. at FNAL. (D0,CMS) 2500
(c) Two physicists to US CMS collaboration meetings 3000

MUON
(a) Two physicists to national meeting 3000

E.2 Foreign Travel (3 faculty, 1 research scientist, 3 postdocs)
( All foreign travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations. )

BABAR
(a) One collaboration meeting for two physicists 4000

FERMILAB-D0/CMS
(a) One collaboration or EPS meeting 2000
(b) Two CMS collaboration meetings/year at CERN for two physicists 4000
(c) One collaboration or EPS meeting for one physicists 2500
(d) One physicist to participate in the CERN test beam run 2000
(e) One PIXEL technical meetings - one physicist  2000

MUON
(a) One MICE or CERN collaboration meeting  2000

G.1 Materials and Supplies
(a) Materials (tapes, supplies, software, licenses) for BABAR analyses  3000

G.2 Publication Costs  1000

G.6 OTI - Other Direct Costs
(a) Long distance charges – conference calls three a week for BABAR D0, CMS, MUON; Shipping and mailing charges.  1000

(b) Tuition remission is requested for each graduate research assistant at the University’s standard rate of $1958 per semester (2 students @ 2 semesters per student @ $1958 per semester = $7832)  7832

*Indirect costs are calculated in accordance with The University of Mississippi’s rate agreement with DHHS, dated February 3, 1999. Indirect costs for research are calculated at 43.5% of Total Direct Costs less equipment, tuition remission, and the portion of each subgrant or subcontract in excess of $25,000. Under a special agreement with the University an indirect cost rate of 34% is applied on modified total direct costs except travel, on which a 10% rate is applied.*
1 Budget Justification -FY05 (4-1-05 to 3-31-06)

A.1-4. Four faculty supported for two summer months each to perform research full-time and to direct students. The summer commitments are:
(a) L. Cremaldi: BABAR 60%, CMS 40%, 00% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%, MUON 30%
(d) B. Quinn: D0 100%
( Academic year support, with reduced teaching loads, is provided by the University.)

A.6. Two months summer salary for Dr. David Sanders, Research Scientist/Computer System Manager. Dr. Sanders is supported 10 months by the physics department. He spends greater than 50% time on the UMHEP computing, RAID Arrays, supporting UMiss systems at SLAC, performing physics analyses. Two months support is requested so he can continue his support of BABAR (systems, RAID arrays, etc.), some software development for CMS, and bring up our D0/CMS computing. Sander’s also supports test beam operations at FNAL/CERN for our group. In his absence for research purposes, the department pays a student for backup (13.2K per yr.). The Department contributes about 5 months of Dr. Sander’s salary, and with the student totals an in-kind contribution of ≈ $33K + 25.04%. fringe.

B.1 Three postdoctoral associate are supported full-time:
(a) H. Zhao: 100% BABAR
(b) R. Godang: 90% BABAR; 10% MUON
(c) post doc 100% D0/CMS

B.3 One graduate student, V. Eschenburg, is doing his dissertation in residence at SLAC and needs full support. A second student working on D0 or BaBaR analyses will phase in.

B.4 Two undergraduate students receive hourly compensation to operate the high energy physics computer farm and assist in data analysis and detector construction.

C. Fringe benefit rate: 25.04% of salary for Senior Personnel and Post Doctoral Associates; 3% of salary and wages for undergraduate and graduate students.
( All salaries and wages and fringe benefits are consistent with guidelines established by the University. )

D. Permanent Equipment 5 Desktop workstations ($10000) will be purchased to both replace existing models and for D0/CMS analyses. One system will be needed at Fermilab and one system at CERN. We will require $5000 for Farm Replacement
and Upgrade Equipment and $5000 for grid disk caches for BaBaR, D0, CMS) GRID computing.

Our RAID storage array at SLAC giving hardware problems- some component failures. We need to send out a spare and repair in house.

E.1 Domestic Travel (3 faculty, 1 research scientist, 3 postdocs, 1 student)
(All domestic travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations.)

BABAR:
(a) Two faculty for one summer months each at SLAC 6000
(b) Supplement for student for 12 months at SLAC 8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs 4500
(d) 3 student or postdoc to University from SLAC during academic year 2400
(e) Two physicists at two national meetings (DPF,IEEE) to present papers 3000
(f) Support for three faculty for three collaboration meetings. 4500

FERMILAB- D0/CMS
(a) 12 trips to Fermilab for physicists on D0, CMS to take shifts(D0), discuss top analysis(D0), detector fabrication(CMS), test beam(CMS).
(b) One physicist for 1 summer mo. at FNAL. (D0,CMS) 2500
(c) Two physicists to US CMS collaboration meetings 3000
(d) One physicist summer mo. at FNAL 2500

MUON
(a) Two physicists to national meeting 3000

E.2 Foreign Travel (3 faculty, 1 research scientist, 3 postdocs)
(All foreign travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations.)

BABAR
(a) One collaboration meeting for two physicists 4000

FERMILAB-D0/CMS
(a) One collaboration or EPS meeting 2000
(b) Two CMS collaboration meetings/year at CERN for two physicists 4000
(c) One collaboration or EPS meeting for one physicists 2500
(d) One physicist to participate in the CERN test beam run 2000
(e) One PIXEL technical meetings - one physicist 2000
MUON
  (a) One MICE or CERN collaboration meeting  2000

G.1 Materials and Supplies
  (a) Materials (tapes, supplies, software, licenses) for BABAR, D0, CMS analyses  3000

G.2 Publication Costs  1000

G.6 OTI - Other Direct Costs
  (a) Long distance charges – conference calls three a week for BABAR, D0, CMS, MUON; Shipping and mailing charges.  1000

  (b) Tuition remission is requested for each graduate research assistant at the University’s standard rate of $1958 per semester (2 students @ 2 semesters per student @ $1958 per semester = $7832)  7832

*Indirect costs are calculated in accordance with The University of Mississippi rate agreement with DHHS, dated February 3, 1999. Indirect costs for research are calculated at 43.5% of Total Direct Costs less equipment, tuition remission, and the portion of each subgrant or subcontract in excess of $25,000. Under a special agreement with the University an indirect cost rate of 34% is applied on modified total direct costs except travel, on which a 10% rate is applied.*
1 Budget Justification -FY06 (4-1-06 to 3-31-07)

A.1-4. Four faculty supported for two summer months each to perform research full-
time and to direct students. The summer commitments are:
(a) L. Cremaldi: BABAR 60%, CMS 40%, 00% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%,MUON 30%
(d) B. Quinn: D0 100%
( Academic year support, with reduced teaching loads, is provided by the University.)

A.6. Two months summer salary per year for Dr. David Sanders, Research Scien-
tist/Computer System Manager. Dr. Sanders is supported 10 months per year by
the physics department. He spends greater than 50% time on the UMHEP comput-
ing, RAID Arrays, supporting UMiss systems at SLAC, performing physics analyses.
Two months support is requested so he can continue his support of BABAR (sys-
tems, RAID arrays, etc.), some software development for CMS, and bring up our
D0/CMS computing. Sander’s also supports test beam operations at FNAL/CERN
for our group. In his absence for research purposes. the department pays a student
for backup (13.2Kper yr.). The Department contributes about 5 months of Dr.
Sander’s salary, and with the student totals an in-kind contribution of \( \approx \$33K +
25.04\% \) fringe.

B.1 Three postdoctoral associate are supported full-time:
(a) H. Zhao: 100% BABAR
(b) R. Godang : 90% BABAR; 10% MUON
(c) post doc 100% D0/CMS

B.3 One graduate student, V. Eschenburg, is doing his dissertation in residence at SLAC
and needs full support. A second student working on D0 or BaBaR analyses will
phase in.

B.4 Two undergraduate students receive hourly compensation to operate the high energy
physics computer farm and assist in data analysis and detector construction.

C. Fringe benefit rate: 25.04% of salary for Senior Personnel and Post Doctoral Asso-
ciates; 3% of salary and wages for undergraduate and graduate students.
( All salaries and wages and fringe benefits are consistent with guidelines established
by the University. )

D. Permanent Equipment 5 Desktop workstations (\$10000) will be purchased to both
replace existing models and for D0/CMS analyses. One system will be needed at
Fermilab and one system at CERN. We will require $5000 for Farm Replacement and Upgrade Equipment and $5000 for grid disk caches for BaBaR, D0, CMS) GRID computing.

Our RAID storage array at SLAC giving hardware problems- some component failures. We need to send out a spare and repair in house.

E.1 Domestic Travel (3 faculty, 1 research scientist, 3 postdocs, 1 student)
(All domestic travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations.)

BABAR:
(a) Two faculty for one summer months each at SLAC 6000
(b) Supplement for student for 12 months at SLAC 8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs 4500
(d) 3 student or postdoc to University from SLAC during academic year 2400
(e) Two physicists at two national meetings (DPF,IEEE) to present papers 3000
(f) Support for three faculty for three collaboration meetings. 4500

FERMILAB- D0/CMS
(a) 12 trips to Fermilab for physicists on D0, CMS to take shifts(D0), discuss top analysis(D0), detector fabrication(CMS), test beam(CMS). 12000
(b) One physicist for 1 summer mo. at FNAL (D0,CMS) 2500
(c) Two physicists to US CMS collaboration meetings 3000
(d) One physicist summer mo. at FNAL 2500

MUON
(a) Two physicists to national meeting 3000

E.2 Foreign Travel (3 faculty, 1 research scientist, 3 postdocs)
(All foreign travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations.)

BABAR
(a) One collaboration meeting for two physicists 4000

FERMILAB-D0/CMS
(a) One collaboration or EPS meeting 2000
(b) Two CMS collaboration meetings/year at CERN for two physicists 4000
(c) One collaboration or EPS meeting for one physicists 2500
(d) One physicist to participate in the CERN test beam run 2000
(e) One PIXEL technical meetings - one physicist

**MUON**
(a) One MICE or CERN collaboration meeting

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**G.1 Materials and Supplies**
(a) Materials (tapes, supplies, software, licenses) for BABAR, D0, CMS analyses

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**G.2 Publication Costs**

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**G.6 OTI - Other Direct Costs**
(a) Long distance charges – conference calls three a week for BABAR, D0, CMS, MUON; Shipping and mailing charges.

(b) Tuition remission is requested for each graduate research assistant at the University's standard rate of $1958 per semester (2 students @ 2 semesters per student @ $1958 per semester = $7832)

*Indirect costs are calculated in accordance with The University of Mississippi rate agreement with DHHS, dated February 3, 1999. Indirect costs for research are calculated at 43.5% of Total Direct Costs less equipment, tuition remission, and the portion of each subgrant or subcontract in excess of $25,000. Under a special agreement with the University an indirect cost rate of 34% is applied on modified total direct costs except travel, on which a 10% rate is applied.*
1 Budget Justification -FY04 -FY07 (4-1-04 to 3-31-07)

A.1-4. Four faculty supported for two summer months each to perform research full-time and to direct students. The summer commitments are:

FY04
(a) L. Cremaldi: BABAR 70%, CMS 30%, 05% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%,MUON 30%
(d) B. Quinn: D0 100%

FY05
(a) L. Cremaldi: BABAR 60%, CMS 40%, 05% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%,MUON 30%
(d) B. Quinn: D0 100%

FY06
(a) L. Cremaldi: BABAR 60%, CMS 40%, 05% MUON
(b) R. Kroeger: BABAR 100%
(c) D. Summers: BABAR 60%, CMS 10%,MUON 30%
(d) B. Quinn: D0 100%

( Academic year support, with reduced teaching loads, is provided by the University.)

A.6. Two months summer salary for Dr. David Sanders, Research Scientist/Computer System Manager. Dr. Sanders is supported 10 months by the physics department. He spends greater than 50% time on the UMHEP computing, RAID Arrays, supporting UMiss systems at SLAC, performing physics analyses. Two months support is requested so he can continue his support of BABAR (systems, RAID arrays, etc.), some software development for CMS, and bring up our D0/CMS computing. Sanders’s also supports test beam operations at CERN for our group. In his absence for research purposes, the department pays a student for backup (13.2K per yr.). The Department contributes about 5 months of Dr. Sanders’s salary, and with the student totals an in-kind contribution of $33K + 25.04%. fringe.

B.1 Three postdoctoral associate are supported full-time:
FY04
(a) J. Bauer: 100% BABAR
(b) H. Zhao: 100% BABAR
(c) R. Godang: 90% BABAR; 10% MUON
FY05
(a) post doc 100% D0/CMS
(b) H. Zhao: 100% BABAR
(c) R. Godang : 90% BABAR; 10% MUON

FY06
(a) post doc: 100% D0/CMS
(b) H. Zhao: 100% BABAR
(c) R. Godang : 90% BABAR; 10% MUON

B.3 One graduate student, V. Eschenburg, is doing his dissertation in residence at SLAC and needs full support. One dissertation student, E. Aitala, is supported by the University and no support is requested for him. Aruniva Roy and Bashali Ray are working 50% department and 50% DOE, and will need future support upon full commitment to HEP. (FY04, FY05,FY06)

B.4 Two undergraduate students receive hourly compensation to operate the high energy physics computer farm and assist in data analysis and detector construction. (FY04, FY05,FY06)

C. Fringe benefit rate: 25.04% of salary for Senior Personnel and Post Doctoral Associates; 3% of salary and wages for undergraduate and graduate students. (All salaries and wages and fringe benefits are consistent with guidelines established by the University.)

D. Permanent Equipment

FY04 12 dual processor CPU’s ($1500 ea) will be purchased for the D0/CMS Linux Computer farm. A 3TB RAID array ($6K ea) will be networked to the farm and analysis work stations (BaBaR,D0,CMS) through a high speed switch ($1K). 25000

FY05 5 Desktop workstations ($10000) will be purchased to both replace existing models and for D0/CMS analyses. One system will be needed at Fermilab and one system at CERN. We will require $5000 for Farm Replacement and Upgrade Equipment and $5000 for grid disk caches for BaBaR, D0, CMS) GRID computing . 20000

FY06 5 Desktop workstations ($10000) will be purchased to both replace existing models and for D0/CMS analyses. Systems needed at Fermilab and CERN. We will require $5000 for Farm Replacement and Upgrade Equipment and $5000 for grid disk caches for BaBaR, D0, CMS) GRID computing . 20000
E.1 Domestic Travel (3 faculty, 1 research scientist, 3 postdocs, 1 student)

(All domestic travel costs are based on average cost of such trips in FY03 corrected for inflation and are consistent with university policy and regulations.)

FY04
BABAR:
(a) Two faculty for one summer months each at SLAC 6000
(b) Supplement for student for 12 months at SLAC 8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs 4500
(d) 3 student or postdoc to University from SLAC during academic year 3600
(e) Two physicists at two national meetings (DPF, IEEE) to present papers 4500
(f) Partial support for three faculty per two collaboration meetings. 4500

FERMILAB- D0/CMS
(a) 10 trips to Fermilab for physicists on D0, CMS to take shifts (D0), discuss top analysis (D0), detector fabrication (CMS), test beam (CMS). 10000
(b) One physicist for 1 summer mo. at FNAL. (D0, CMS) 2500
(c) Two physicists to US CMS collaboration meetings 3000

MUON
(a) Two physicists to national meeting 3000

FY05
BABAR:
(a) Two faculty for one summer months each at SLAC 6000
(b) Supplement for student for 12 months at SLAC 8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs 4500
(d) 3 student or postdoc to University from SLAC during academic year 2400
(e) Two physicists at two national meetings (DPF, IEEE) to present papers 3000
(f) Support for three faculty for three collaboration meetings. 4500

FERMILAB- D0/CMS
(a) 12 trips to Fermilab for physicists on D0, CMS to take shifts (D0), discuss top analysis (D0), detector fabrication (CMS), test beam (CMS). 12000
(b) One physicist for 1 summer mo. at FNAL. (D0, CMS) 2500
(c) Two physicists to US CMS collaboration meetings 3000
(d) One physicist summer mo. at FNAL 2500

MUON
(a) Two physicists to national meeting 3000
### FY06

**BABAR:**

(a) Two faculty for one summer months each at SLAC  
   6000
(b) Supplement for student for 12 months at SLAC  
   8000
(c) One faculty 1 trip/3-months to SLAC during academic year to run shifts, direct students and consult with postdocs  
   4500
(d) 3 student or postdoc to University from SLAC during academic year  
   2400
(e) Two physicists at two national meetings (DPF,IEEE) to present papers  
   3000
(f) Support for three faculty for three collaboration meetings  
   4500

**FERMILAB- D0/CMS**

(a) 12 trips to Fermilab for physicists on D0, CMS to take shifts(D0), discuss top analysis(D0), detector fabrication(CMS), test beam(CMS)  
   12000
(b) One physicist for 1 summer mo. at FNAL. (D0,CMS)  
   2500
(c) Two physicists to US CMS collaboration meetings  
   3000
(d) One physicist summer mo. at FNAL  
   2500

**MUON**

(a) Two physicists to national meeting  
   3000

### E.2 Foreign Travel (3 faculty, 1 research scientist, 3 postdocs)

*All foreign travel costs are based on average cost of such trips in FY00 corrected for inflation and are consistent with university policy and regulations.*

### FY04

**BABAR**

(a) One collaboration meeting for two physicists  
   4000

**FERMILAB-D0/CMS**

(a) One collaboration or EPS meeting  
   2000
(b) Two CMS collaboration meetings/year at CERN for two physicists  
   4000
(c) One collaboration or EPS meeting for one physicists  
   2500
(d) One physicist to participate in the CERN test beam run  
   2000
(e) One PIXEL technical meetings - one physicist  
   2000

**MUON**

(a) One MICE or CERN collaboration meeting  
   2000

### FY05

**BABAR**

(a) One collaboration meeting for two physicists  
   4000
**FERMILAB-D0/CMS**

(a) One collaboration or EPS meeting 2000
(b) Two CMS collaboration meetings/year at CERN for two physicists 4000
(c) One collaboration or EPS meeting for one physicists 2500
(d) One physicist to participate in the CERN test beam run 2000
(e) One PIXEL technical meetings - one physicist 2000

**MUON**

(a) One MICE or CERN collaboration meeting 2000

**FY06**

**BABAR**

(a) One collaboration meeting for two physicists 4000

**FERMILAB-D0/CMS**

(a) One collaboration or EPS meeting 2000
(b) Two CMS collaboration meetings/year at CERN for two physicists 4000
(c) One collaboration or EPS meeting for one physicists 2500
(d) One physicist to participate in the CERN test beam run 2000
(e) One PIXEL technical meetings - one physicist 2000

**MUON**

(a) One MICE or CERN collaboration meeting 2000

**G.1 Materials and Supplies**

(a) Materials (tapes, supplies, software, licenses) for BABAR analyses 9000

**G.2 Publication Costs**

3000

**G.6 OTI - Other Direct Costs**

(a) Long distance charges – conference calls three a week for BABAR D0, CMS, MUON ; Shipping and mailing charges. 3000

(b) Tuition remission is requested for each graduate research assistant at the University's standard rate of $1958 per semester (2 students @ 2 semesters per student @ $1958 per semester = $7832) x 3 years 23496

*Indirect costs are calculated in accordance with The University of Mississippi's rate agreement with DHHS, dated February 3, 1999. Indirect costs for research are calculated at 43.5% of Total Direct Costs less equipment, tuition remission, and the*
portion of each subgrant or subcontract in excess of $25,000. Under a special agreement with the University an indirect cost rate of 34% is applied on modified total direct costs except travel, on which a 10% rate is applied.