

## Sridhara Rao Dasu

Department of Physics  
1150 University Avenue  
University of Wisconsin-Madison  
Madison, WI 53706

phone: (608) 262-3678  
wireless: (408) 829-6625  
fax: (608) 263-0800  
email: [dasu@hep.wisc.edu](mailto:dasu@hep.wisc.edu)  
<http://www.hep.wisc.edu/~dasu>

### Personal Data

Date of Birth: August 25, 1961 in Hyderabad, India  
Nationality: United States (naturalized)

### Education

1988 Ph.D. Physics, University of Rochester, Rochester, NY  
Thesis Advisor: Professor Arie Bodek  
Thesis Title: *Precision Measurement of  $x$ ,  $Q^2$  and  $A$ -dependence of  $R = \sigma_T/\sigma_T$  and  $F_2$  in Deep Inelastic Scattering*  
1985 M.A. Physics, University of Rochester, Rochester, NY  
1983 M.Sc. Physics, University of Hyderabad, Hyderabad, India  
1981 B.Sc., Nizam College (Osmania University), Hyderabad, India

### Positions Held

2010 – Present Full Professor, University of Wisconsin-Madison  
2006 – 2009 Associate Professor, University of Wisconsin-Madison  
2000 – 2005 Assistant Professor, University of Wisconsin-Madison  
2000 – 2000 Associate Scientist, University of Wisconsin-Madison  
1992 – 1999 Assistant Scientist, University of Wisconsin-Madison  
1995 – 1995 Lecturer, University of Wisconsin-Madison  
1988 – 1992 Research Associate, Stanford Linear Accelerator Center  
1983 – 1988 Research/Teaching Assistant, University of Rochester

### Collaborations

1994 – now CMS experiment at CERN – High Energy Proton-Proton Collisions  
1997 – 2010 BaBar experiment at SLAC –  $e^+e^-$  Annihilations at Upsilon(4S)  
1992 – 1997 ZEUS experiment at DESY – High Energy Electron-Proton Collisions  
1992 – 1994 SDC experiment at SSC Laboratory – High Energy Proton-Proton Collisions  
1988 – 1992 SLD experiment at SLAC –  $e^+e^-$  Annihilations at  $Z^0$   
1985 – 1992 E140 experiment at SLAC – Measurement of  $R$  in Deep Inelastic Scattering  
1985 – 1988 E141 experiment at SLAC – Search for Short Lived Axions in Beam Dump

## Professional Activities

### Collaboration Management Responsibilities

|                |   |
|----------------|---|
| 2010 – 2011    | Upgrade Physics Coordinator for CMS                             |
| 2008 – 2009    | Co-convener of the Electroweak Physics group of CMS             |
| 2005 – 2007    | Co-convener of the Online Selection group of CMS                |
| 2005 – Present | Manager of the CMS Tier-2 Computing Center at Wisconsin         |
| 2003 – Present | Head of the Technical Board of the Grid Laboratory Of Wisconsin |
| 1998 – Present | USCMS Level-3 Manager of CMS L1 Calorimeter Trigger System      |

### Community and Collaboration Service

|                |  |
|----------------|--|
| 2007 – Present | Member, US LHC Users Organization Executive Committee      |
| 2007 – 2009    | Member, USCMS Institutional Advisory Board                 |
| 2004 – 2007    | Member, LHC Physics Center Advisory Board                  |
| 2000 – 2007    | Member/Chair(03-07), USCMS Advisory Software & Comp. Board |
| 2001 – 2002    | Chair, SLAC Users Organization Executive Committee         |
| 2000 – 2003    | Member, SLAC Users Organization Executive Committee        |

## Publications

Prof. Dasu is an author of over 650 papers published in peer-reviewed journals by BaBar, CMS, SLD, ZEUS and fixed target experiments at SLAC. Recently >100 publications per year are made, of which ~10 have direct scientific involvement. For complete list see:

<http://www.slac.stanford.edu/spires/find/hep/www?rawcmd=find+a+dasu+and+ps+published&FORMAT=WWWBRIEF&SEQUENCE=ds%28d%29>

### Selected Publications (those with significant direct contributions)

1. CMS Collaboration, “*Rates of Jets Produced in Association with W and Z Bosons production in pp collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, Submitted to Euro. Phys. J C, arXiv:1110.3226v1, 2011
2. CMS Collaboration, “*Performance of  $\tau$ -lepton reconstruction and identification in CMS*”, J. Instrum. **7** (2012) P01001
3. CMS Collaboration, “*Measurement of the Inclusive Z Cross Section via Decays to Tau Pairs in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, J. High Energy Phys. **08** (2011) 117
4. CMS Collaboration, “*Search for First Generation Scalar Leptoquarks in the  $e\nu jj$  Channel in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, Phys. Lett. **B 703** (2011) 246-266
5. CMS Collaboration, “*Measurement of  $W\gamma$  and  $Z\gamma$  production in pp collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, Phys.Lett. **B701**, 535-555, 2011
6. CMS Collaboration, “*Search for Neutral MSSM Higgs Bosons Decaying to Tau Pairs in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, Phys. Rev. Lett. **106**, 231801, 2011
7. CMS Collaboration, “*Measurement of the Isolated Prompt Photon Production Cross Section in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, Phys. Rev. Lett. **106**, 082001, 2011

8. CMS Collaboration, “*Measurements of Inclusive W and Z Cross Sections in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$* ”, JHEP **1101**, 080, 2011
9. CMS Collaboration, “*Search for Pair Production of First-Generation Scalar Leptoquarks in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$ .*”, Phys. Rev. Lett. **106**, 201802, 2011
10. CMS Collaboration, “*Search for Pair Production of Second-Generation Scalar Leptoquarks in pp Collisions at  $\sqrt{s} = 7 \text{ TeV}$ .*”, Phys. Rev. Lett. **106**, 201803, 2011
11. BaBar Collaboration, “*Search for the Rare Decay  $B \rightarrow K \nu \bar{\nu}$* ”, Phys. Rev. **D82**, 112002, 2010
12. BaBar Collaboration, “*Direct CP, Lepton Flavor and Isospin Asymmetries in the Decays  $B \rightarrow K^* l^+ l^-$* ”, Phys. Rev. Lett. **102**, 091803 (2009)
13. BaBar Collaboration, “*Angular Distributions in the Decays  $B \rightarrow K^* l^+ l^-$* ”, Phys. Rev. **D79**, 031102 (2009)
14. CMS Collaboration, “*Performance of the CMS Level1 Trigger during Commissioning with Cosmic Ray Muons and LHC beams*”, J. Instrum. **5** (2010) T03002
15. CMS Collaboration, “*Commissioning of the CMS High-Level Trigger with Cosmic Rays*”, J. Instrum. **5** (2010) T03005
16. CMS Collaboration, “*The CMS experiment at the CERN LHC*”, JINST **0803**, S08004 (2008)
17. CMS Collaboration, “*CMS Physics Technical Design Report, Vol. 2*”, CERN/LHCC 2006-021 (2006), J. Phys. G: Nucl. Part. Phys. **34** (2007) 995-1579
18. CMS HLT Group, “*The CMS high level trigger*”, Euro. Phys. J. **C46**, 605 (2006)
19. CMS Collaboration, “*CMS Physics Technical Design Report, Vol. 1*”, CERN/LHCC 2006-001 (2006)
20. BaBar Collaboration, “*Search for Radiative Penguin Decays  $B^+ \rightarrow \rho^+ \gamma$ ,  $B^0 \rightarrow \rho^0 \gamma$ , and  $B^0 \rightarrow \omega^0 \gamma$* ”, Phys. Rev. Letters **94**, 011801 (2005)
21. CMS Collaboration, “*The Computing Project - Technical Design Report*”, CERN/LHCC 2005-023 (2005)
22. BaBar Collaboration, “*Measurements of the  $B \rightarrow X_s \gamma$  branching fraction and photon spectrum from a sum of exclusive final states*”, Phys. Rev. **D72** (2005) 052004
23. BaBar Collaboration, “*Measurement of branching fractions, and CP and isospin asymmetries, for  $B^0 \rightarrow K^* \gamma$* ”, Phys. Rev. **D70**, 112006 (2004)
24. S. Dasu [CMS Collaboration], “*CMS Trigger And Event Selection*”, Eur. Phys. J. **C4S1**, 09 (2002)
25. BaBar Collaboration, “*The BaBar Detector*”, Nucl. Instrum. Meth. A **479**, 1 (2002)
26. CMS Collaboration, “*The Trigger and Data Acquisition Project, Volume II: The High Level Trigger and Data Acquisition - Technical Design Report*”, CERN/LHCC 2002-026 (2002)
27. CMS Collaboration, “*The Trigger and Data Acquisition Project, Volume I: The Level-1 Trigger - Technical Design Report*”, CERN/LHCC 2000-038 (2000)
28. ZEUS Collaboration, “*Measurement of the  $F_2$  structure function in deep inelastic ep scattering using 1994 data from the ZEUS detector at HERA*”, Z.Phys. **C72** (1996) 399-424
29. ZEUS Collaboration, “*Measurement of the proton structure function  $F_2$  at low x and low  $Q^2$  at HERA*”, Z.Phys. **C69** (1996) 607-620

30. CMS Collaboration, “*The Compact Muon Solenoid - Technical Proposal*”, CERN/LHCC 94-38 (1994)
31. SLD Collaboration, “*Performance of the SLD barrel CRID during the 1992 physics data run*”, IEEE Trans.Nucl.Sci. 40 (1993) 589-592
32. R. C. Walker, et al., “*Measurements of the proton elastic form-factors at SLAC*”, Phys. Rev. D49 (1994), p.5671.
33. S. Dasu, et al., “*Measurement of kinematic and nuclear dependence of  $R=\sigma_L/\sigma_T$  in deep inelastic electron scattering*”, Phys. Rev. D49 (1994), p.5641
34. SLD Collaboration, “*First measurement of the left-right cross-section asymmetry in Z boson production by  $e^+ e^-$  collisions*”, Phys.Rev.Lett. **70** (1993) 2515-2520
35. L.W. Whitlow, et al., “*Precise measurements of the proton and deuteron structure functions from a global analysis of the SLAC deep inelastic electron scattering cross sections*”, Phys. Lett. **B282** (1992), p.475
36. L.W. Whitlow, S. Rock, A. Bodek, S. Dasu and E. M. Riordan, “*A precise extraction of  $R=\sigma_L/\sigma_T$  from a global analysis of the SLAC deep inelastic  $e$ -P and  $e$ -D scattering cross sections*”, Phys. Lett. **B250** (1990), p.193.
37. R.C. Walker, et al., “*Measurement of the proton elastic form-factors*”, Phys. Lett. **B224** (1989), p.353.
38. S. Dasu, et al., “*Precision measurement of  $R=\sigma_L/\sigma_T$  and  $F_2$  in deep inelastic electron scattering*”, Phys. Rev. Lett. **61** (1988), p.1061.
39. S. Dasu, et al., “*Measurement of the difference in  $R$  and  $F_2$  in deep inelastic  $e$ -D,  $e$ -Fe and  $e$ -Au scattering*”, Phys. Rev. Lett. **60** (1988), p.2591.
40. E.M. Riordan, et al., “*A search for short lived axions in an electron beam dump experiment*”, Phys. Rev. Lett. **59** (1987), p.755.

## Technical Reports

Member of the Editorial Board: “CMS. The TriDAS project.” Technical Design Report, Vol 1: The Trigger CERN-LHCC-2000-038

Co-editor: “Proceedings of the DIS2005.” AIP 792, ISBN 0-7354-0283-3.

Member of the Editorial Board: “Technical Proposal for the Upgrade of the CMS detector through 2020” CERN-LHCC-2011-006

## Invited Presentations, Colloquia and Seminars

### Conferences

1. *Using Vector Bosons to Probe QCD at LHC*, Workshop on Quarks, Gluons and Hadrons at LHC, August 2011, Mumbai, India.
2. *Latest Results from CMS at LHC*, Lake Louise Winter Institute in Particle Physics, February 2011, Lake Louise, Canada.
3. *Rare B decays using BaBar*, Workshop on Synergy between Energy and Luminosity Frontiers, SEL2011, January 2011, TIFR, Mumbai, India
4. *Establishing the Standard Model at LHC*, Workshop on Synergy between Energy and Luminosity Frontiers, SEL2011, January 2011, TIFR, Mumbai, India
5. *LHC Status and Its Physics Potential*, DAE-BRNS Symposium on High Energy Physics, December 2008, Varanasi, India.
6. *Rapid-response Adaptive Computing Environment for CMS*, International Conference on Computing in High Energy and Nuclear Physics, September 2007, Victoria, Canada.
7. *CMS Status and HLT Exercise*, CERN Theory Workshop, August 2007, CERN, Geneva, Switzerland.
8. *Standard Model Higgs at LHC*, 2007 Aspen Winter Conference: New Physics at the Electroweak Scale and New Signals at Hadron Colliders, January 2007, Aspen, Colorado.
9. *CMS Trigger Strategy*, West Coast LHC Theory Network, May 2006, San Diego, California.
10. *Grid Laboratory Of Wisconsin and DISUN*, Condor Week, April 2006, Madison, Wisconsin.
11. *Contribution of Condor and GLOW to LHC*, International Conference on Computing in High Energy and Nuclear Physics, February 2006, Mumbai, India.
12. *Grid Laboratory Of Wisconsin (GLOW)*, Global Grid Forum Workshop on Campus Grids, Harvard University, September 2005, Cambridge, MA.
13. *Computing in High Energy Physics and its Relevance for Other Sciences*, Genomic Sciences Training Program, June 2005, Madison, WI.
14. *Challenges of LHC: Trigger*, 2005 Aspen Winter Conference: The Highest Energy Physics, Aspen, Colorado, February, 2005
15. *Use of Condor and GLOW for CMS Simulation Production*, CHEP'04, International conference on computing in high energy physics, Interlaken, Switzerland, September, 2004.
16. *Search for New Physics at B-Factories*, The 12th International Conference on Supersymmetry and Unification of Fundamental Interactions, Tsukuba, Japan, June 17-23, 2004
17. *Grid Computing - A Primer* WiscNet Future Technologies Conference, Madison, WI, USA, April 2004
18. *Probing the Standard Model with Electroweak Penguin B Decays*, XXIII Physics in Collision, Zeuthen, Germany, June 26-28, 2003.
19. *Higgs Search At LHC*, IXth International Symposium on Particles, Strings and Cosmology, PASCOS '03, Mumbai, India, January 3-8, 2003
20. *Prospects for measurement of  $V_{td}/V_{ts}$  using  $b \rightarrow d\gamma$  and  $b \rightarrow s\gamma$  at the B factories*, Workshop on the CKM Unitarity Triangle, Geneva, Switzerland, Feb 2002

21. *Physics at CMS Trigger and Event Filter Level*, III International Symposium on LHC Physics and Detectors, Chia, Sardinia, Italy, October 2001.
22. *Physics at B Factories*, Phenomenology Symposium, Madison, WI, April 2000.
23. *Physics at LHC*, Aspen Winter Conference on Particle Physics - Vistas on XXIst Century Particle Physics, Aspen, USA, January 16-22, 2000
24. *Search for new physics at LHC*, The Second International Conference on Physics beyond the Standard Model; Beyond the Desert'99 – Accelerator, Non-Accelerator and Space approaches into the Next Millenium, Tegernsee, Germany, Jun 6-12, 1999
25. *CMS Calorimeter Regional Trigger Prototypes*, LEB'99, Fifth Workshop on Electronics for LHC Experiment, Snowmass, USA, September, 1999.
26. *CMS/LHC Status and Physics Prospects*, Fermilab Users Meeting, July 1998.
27. *The Standard model physics from HERA*, Pheno-CTEQ Symposium 1998 - From non-perturbative QCD to new physics, Madison, Wisconsin, Mar 23-26, 1998.
28. *Event logging and distribution for the BaBar Online System*, CHEP'98, International conference on computing in high energy physics, Chicago, USA, September, 1998.
29. *The calorimeter trigger system for CMS detector*, CHEP'98, International conference on computing in high energy physics, Chicago, USA, September, 1998.
30. *Physics potential of CMS/LHC*, 4th International conference on physics potential and development of  $\mu+\mu-$  colliders, San Francisco, California, Dec 10-12, 1997.
31. *High speed data processing for the CMS calorimeter trigger*, IEEE Nuclear Science Symposium, Albuquerque, New Mexico, November 1997
32. *Calorimeter trigger electronics for CMS detector at LHC*, CHEP'97, International conference on computing in high energy physics, Berlin, Germany, April, 1997.
33. *Extraction of the gluon density in proton from the ZEUS DIS cross section*, DPF'96, Minneapolis, Minnesota, Aug 10-15, 1996.
34. *CMS calorimeter trigger circuits*, Trigger electronics for capturing physics with CMS detector at LHC, DPF'96, Minneapolis, Minnesota, Aug 10-15, 1996.
35. *CMS level-1 calorimeter trigger*, International conference on computing in high energy physics, Rio de Janeiro, Brazil, September 18-22, 1995.
36. *Level-1 calorimeter trigger for LHC*, The fifth international conference on calorimetry in high energy physics, Brookhaven, New York, September 26-30, 1994.
37. *SDC level-1 calorimeter trigger*, International conference on computing in high energy physics, San Fransisco, California, April 21-27, 1994.
38. *SDC level-1 calorimeter trigger*, The fourth international conference on calorimetry in high energy physics, La Biodola, Isola d'Elba, Italy, September 19-25, 1993.
39. *Study of nuclear effects in the deuteron and extraction of  $F_2^N / F_2^P$* , The fourth conference on intersections between particle and nuclear physics, Tucson, Arizona, May 23-29, 1991.
40. *Measurement of kinematic and nuclear dependence of  $R = \sigma_L / \sigma_T$* , International Europhysics conference on high energy physics, Uppsala, Sweden, June 25 - July 1, 1987.
41. *Measurement of kinematic and nuclear dependence of  $R = \sigma_L / \sigma_T$* , The second Lake Louise winter institute on new frontiers in particle physics, Lake Louise, Canada, February 15-21, 1987.

Colloquia and Seminars:

1. Public Lecture, B.M. Birla Science Center, Hyderabad, India, December 2011
2. Seminar, Indian Institute of Mathematical Sciences, Chennai, India, December 2011
3. Colloquium, University of Wisconsin, Madison, WI, September 2011=
4. Seminar, Indian Institute of Technology, Mumbai, India, January 2011
5. Seminar, Stanford Linear Accelerator Center, Menlo Park, CA, November 2010
6. Seminar, Rice University, Houston, January 2008
7. Seminar, CERN, Geneva, Switzerland, July 2005
8. Seminar, Stanford Linear Accelerator Center, Menlo Park, CA, June 2005
9. Seminar, University of Illinois, Urbana-Champaign, IL, April 2004
10. Seminar, University of Wisconsin, Madison, WI, April 2004
11. Seminar, Argonne National Laboratory, Chicago, IL, September 2003
12. Seminar, University of Hyderabad, Hyderabad, India, January 2003
13. Seminar, University of Hyderabad, Hyderabad, India, January 2003
14. Colloquium, University of Alabama, Tuscaloosa, AL, March 2000
15. Colloquium, University of Wisconsin, Madison, WI, February 2000
16. Seminar, University of Wisconsin, Madison, WI, November 2000
17. Seminar, California Institute of Technology, Pasadena, CA, 1999
18. Seminar, Stanford Linear Accelerator Center, Menlo Park, CA, 1998
19. Colloquium, University of Notre Dame, IN, February 1997
20. Seminar, University of Notre Dame, IN, February 1997
21. Seminar, State University of New York, Stony Brook, NY, December 1996
22. Seminar, University of Hyderabad, Hyderabad, India, January 1995
23. Colloquium, Tata Institute of Fundamental Research, Bombay, India, January 1995
24. Seminar, Tata Institute of Fundamental Research, Bombay, India, January 1995
25. Colloquium, DESY Laboratory, Hamburg, Germany, 1994
26. Seminar, University of Wisconsin, Madison, WI, September 1991
27. Seminar, SSC Laboratory, Dallas, TX, September 1991
28. Seminar, University of California-Davis, Davis, CA, 1990
29. Seminar, University of Chicago, Chicago, IL, December 1987
30. Seminar, Fermi National Accelerator Laboratory, Batavia, IL, December 1987
31. Seminar, Stanford Linear Accelerator Center, Menlo Park, CA, November 1987

## Research Funding

### Lead PI:

Title: U.S. CMS Operations at the LHC (Support for Tier-2 Computing Center at UW)  
Agency: Princeton University (National Science Foundation subcontract)  
Award Amount: \$2,891,182 (Total @ Princeton \$50M)  
Dates: Jan 2012 – Dec 2016

Title: Any Data, Anytime, Anywhere  
Agency: National Science Foundation  
Award Amount: \$710,171  
Dates: Sep 2011 – Aug 2014

Title: Fall Competition  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$33,735  
Dates: Jul 2009 – Jun 2010

Title: Data Intensive Science University Network (DISUN)  
Agency: UCLA (National Science Foundation subcontract)  
Award Amount: \$2,303,000 (Total @ UCLA \$10 M)  
Dates: May 2005 - May 2010

Title: Rapid-response Adaptive Computing Environments  
Agency: National Science Foundation  
Award Amount: \$750,000  
Dates: Sep 2004 - Aug 2008

Title: USCMS Research Program – Software & Computing and Maintenance & Operation  
Agency: UCLA (National Science Foundation subcontract)  
Award Amount: \$284,000  
Dates: May 2005 – February 2006

Title: A Portal to the Distributed Computer Grid for the CMS at LHC  
Agency: National Science Foundation  
Award Amount: \$162,000  
Dates: Sep 2002-Aug 2004

Title: US CMS Software & Computing Subsystem  
Agency: Fermi National Accelerator Laboratory  
Award Amount: \$293,143  
Dates: Aug 2002 - Sep 2006

Title: Probing Matter/Anti-matter Asymmetry,  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$26,660  
Dates: Jul 2004 - Jun 2005

Title: Probing the Origin of Mass and Matter/Anti-matter Asymmetry,  
Agency: UW Graduate School  
Award Amount: \$24,420  
Dates: Jul 2003 - Jun 2004

Title: Large Scale Distributed Computing for HEP Research  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$19,374  
Dates: Jul 2002 - Jun 2003

Title: Condor: CMS Trigger Simulation  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$32,500  
Dates: Jul 2000 - Jun 2003

Title: Startup Package  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$108,333  
Dates: Jul 2000 - Jun 2003

Title: Startup Package  
Agency: UW Physics Department  
Award Amount: \$150,000  
Dates: Jul 2000 - Jun 2005

**Co-PI:**

Title: CMS @ LHC  
Agency: US Department of Energy  
Award Amount: ~\$20,426,628 (PI: Prof. Smith)  
Dates: Nov 1996 - Oct 2012

Title: Collaborative Research: Design and Integration of Complex Digital Systems for HEP  
Agency: National Science Foundation  
Award Amount: \$183,828 (PI: Prof. Schulte)  
Dates: Sep 2008 - Aug 2011

Title: US CMS M&O and S&C: Trigger, Computing, Muon, Common Operations  
Agency: UCLA (National Science Foundation subcontract)  
Award Amount: \$2,716,470 (PI: Prof. Smith)  
Dates: Jan 2007 - Dec 2011

Title: Electromagnetic & Weak Interactions at SLAC  
Agency: US Department of Energy  
Award Amount: \$5,824,087 (PI: Prof. Prepost)  
Dates: Nov 1996 - Oct 2010

Title: ARRA: Research Infrastructure for Particle Physics  
Agency: US Department of Energy  
Award Amount: \$286,100  
Dates: Nov 2009 – Oct 2010

Title: MRI: Acquisition of the second phase of GLOW  
Agency: NSF  
Award Amount: \$500,000 (PI: Prof. Livny)  
Dates: Sep 2007 – Aug 2010

Title: Data Analysis Facility  
Agency: US Department of Energy  
Award Amount: \$160,000 (PI: Prof. Smith)  
Dates: Nov 2000 - Oct 2007

Title: Grid Laboratory of Wisconsin  
Agency: National Science Foundation  
Award Amount: \$1,186,405 (PI: Prof. Livny)  
Dates: Sep 2003 - Aug 2006

Title: Matching for NSF MRI: GLOW  
Agency: Wisconsin Alumni Research Foundation  
Award Amount: \$508,459 (PI: Prof. Livny)  
Dates: Sep 2003 - Aug 2006

## List of Primary Collaborators with Shared Funding/Responsibilities

|                         |           |             |
|-------------------------|-----------|-------------|
| Prof. Wesley Smith      | Wisconsin | CMS         |
| Prof. Duncan Carlsmith  | Wisconsin | CMS         |
| Prof. Matt Herndon      | Wisconsin | CMS         |
| Dr. Richard Loveless    | Wisconsin | CMS         |
| Prof. Richard Prepost   | Wisconsin | BaBar       |
| Prof. Miron Livny       | Wisconsin | Computing   |
| Prof. Michael Schulte   | Wisconsin | Electronics |
| Prof. Katherine Compton | Wisconsin | Electronics |

## List of Research Staff

### Current Postdoctoral Researchers and Professionals

|                      |                                     |
|----------------------|-------------------------------------|
| Dr. Maria Cepeda     | Research Associate, CMS             |
| Dr. Evan Friis       | Research Associate, CMS             |
| Dr. Pamela Klabbers, | Associate Scientist, CMS            |
| Dr. Sascha Savin     | Associate Scientist, CMS            |
| Dr. Ajit Mohapatra,  | Researcher (Physics Computing), CMS |
| Mr. Dan Bradley,     | Software Engineer, CMS              |
| Mr. Will Maier,      | System Administrator, CMS           |
| Mr. Steve Rader,     | System Administrator, UWHEP         |
| Mr. Tom Gorski,      | Electronics Engineer, CMS           |
| Mr. Robert Fobes,    | Electronics Technician, CMS         |

### Past Postdoctoral Researchers and Professionals

|                                   |  |
|-----------------------------------|--|
| Dr. Monika Grothe, CMS            | Teaching, Italy                        |
| Dr. Jonathan Efron, CMS           | Industry, Minnesota                    |
| Dr. Francesca Di Lodovico, BaBar, | Lecturer, Queen Mary College, England. |
| Dr. Ajit Mohapatra, BaBar,        | Researcher, University of Wisconsin    |
| Dr. Maurizio Pierini, BaBar       | Fellow, CERN                           |
| Dr. Kevin Flood, BaBar            | Research Scientist, CalTech            |

## List of Students

### Current Graduate Students

|                     |  |
|---------------------|--|
| Mr. Michal Bachtis, | Ph.D. Student, CMS                       |
| Mr. Lindsey Gray,   | Ph.D. Student, CMS                       |
| Mr. Aaron Levine    | Ph.D. Student, CMS                       |
| Mr. Ian Ross,       | Ph.D. Student, CMS                       |
| Mr. Austin Belknap  | Ph.D. Student, CMS (advisor Prof. Smith) |
| Ms. Isobel Ojalvo   | Ph.D. Student, CMS (advisor Prof. Smith) |
| Mr. Joshua Swanson  | Ph.D. Student, CMS (advisor Prof. Smith) |

### Past Graduate Students

|                        |  |
|------------------------|--|
| Dr. Mike Anderson,     | Ph.D. (CMS) 2011, Industry, TX                                 |
| Dr. Kira Grogg         | Ph.D. (CMS) 2011, Harvard Medical School (advisor Prof. Smith) |
| Dr. Marc Weinberg      | Ph.D. (CMS) 2011, Florida State, (advisor Prof. Smith)         |
| Dr. Christos Lazaridis | Ph.D. (CMS) 2011, CERN, (advisor Prof. Smith)                  |
| Dr. Jessica Leonard    | Ph.D. (CMS) 2011, Wisconsin, (advisor Prof. Smith)             |
| Dr. Carl Vuosalo,      | Ph.D. (BaBar) 2009, Ohio-State                                 |
| Dr. Jonathan Hollar,   | Ph.D. (BaBar) 2006, Belgium (advisor Prof. Prepost)            |
| Dr. Ping Tan           | Ph.D. (BaBar) 2005, FNAL                                       |
| Dr. Andrew Eichenbaum  | Ph.D. (BaBar) 2004, Industry, CA (advisor Prof. Prepost)       |

### Past Masters Students

|                       |   |
|-----------------------|---|
| Ms. Ada Rubin         | M.S. (Physics) 2004, Ph. D. Student, Iowa State |
| Ms. Meghan O'Connell, | M.S. (Physics Education) 2005                   |
| Ms. Kendra Rand,      | M.S. (Physics Education) 2005                   |
| Mr. V. Mehta          | M.S. (EE/CS) 2007, Industry, Santa Clara, CA    |
| Mr. V. Puttabuddhi,   | M.S. (EE/CS) 2005, Industry, Mountain View, CA  |
| Mr. R. Gowrishankara, | M.S. (EE/CS) 2004, Industry, Boston, MA         |
| Mr. R. Rajamani,      | M.S. (EE/CS) 2002, Industry, Palo Alto, CA      |

## Summary of Research Activities<sup>1</sup>

Recent research of Prof. Sridhara Dasu is focused on understanding the mechanism of electro-weak symmetry breaking using 7-TeV proton-proton collision data acquired with the CMS detector at the LHC. Using the 40 pb<sup>-1</sup> 2010 data, Prof. Dasu's team played a crucial role in measuring the production cross sections for electro-weak bosons (W and Z) inclusively [8], Z boson using difficult to measure  $\tau$ -pair mode [3], W and Z in association with jets [1] and in pairs (e.g.,  $W\gamma$  and  $Z\gamma$ ) [5]. Preliminary measurements of ZZ cross section were also reported at 2011 summer conferences. These measurements in part established the Standard Model (SM) at the new 7-TeV pp collision regime of the LHC. Special emphasis was placed on the triggering, reconstruction and validation of  $\tau$ -leptons, as they are difficult to study in hadronic environment but are crucial for studying EWSB.

After characterizing the  $\tau$ -lepton reconstruction performance [2] and measuring the Z production in  $\tau$ -pair mode, the focus shifted to search for the Higgs boson(s). The first paper, using the 2010 data itself, focused on the neutral Higgs bosons of the Minimal Supersymmetric Standard Model (MSSM), because their coupling to  $\tau$ -leptons is enhanced in certain regions of MSSM parameter space [6]. The increasing data volume from LHC in 2011 permitted further improvement of MSSM neutral higgs reach, capitalizing on the signature of associated b-jets. The search for the SM higgs has also begun with the requirement of forward jet tags and boosted topologies. Preliminary results were presented in 2011 Summer conferences with partial data, quickly followed by the full 4.7 fb<sup>-1</sup> results at CERN in December. This publication is under preparation. The sensitivity has reached close to the SM expectation and we are anticipating definitive exploration using 2012 data. The search for SM higgs decaying to Z-pairs in 4-lepton mode (including  $\tau$ -leptons) was also performed and presented. This publication is also in preparation.

Prof. Dasu studied the flavor-changing neutral current electro-weak decays of the B-meson, which are suppressed at the tree-level in the SM model, using the data acquired with the BaBar detector at PEP-II  $e^+e^-$  collider at SLAC. The primary goal of that research was to look for deviations from the SM predictions of these rare B-decay rates and asymmetries, due to the presence of new physics contributions, e.g., those due to charged Higgs bosons of the MSSM, in the penguin loop. These studies also yielded measurements of parameters that characterize the B-hadron and SM CKM elements  $V_{td}$  and  $V_{ts}$ . The B-decay processes studied were: semi-inclusive  $b \rightarrow s\gamma$  [22],  $B \rightarrow K^*\gamma$  [23] and  $B \rightarrow \rho\gamma$  [20],  $B \rightarrow K^{(*)}ll$  [12] and  $B \rightarrow K^{(*)}\nu\nu$  [11].

Prof. Dasu studied the deep inelastic electron-proton scattering using the data collected by the fixed target experiments at SLAC extensively [32-33, 35-39], and also using ZEUS detector at HERA briefly [28,29]. The measurement of proton structure functions  $F_2$  and especially  $F_L$  allowed precision testing of QCD, and are the basis for extraction of parton densities in proton.

Prof. Dasu made large contributions to the design and implementation of trigger and computing systems for CMS [14-19, 21, 24, 26-27, 30], data acquisition and processing software for BaBar [25], Cherenkov ring imaging detector for SLD [31] and building the particle ID and calorimeter systems for the E140 experiment. He continues to contribute to the designs for CMS upgrades.

---

<sup>1</sup> For references see the section entitled Selected Publications above