

MURUGESWARAN DURAISAMY

Department of Physics
Virginia Commonwealth University
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PARTICULARS

EDUCATION

University of Cincinnati, Cincinnati, Ohio, USA
Doctor of Philosophy in Physics
Field of Study: Theoretical High Energy Physics

December 2009

University of Cincinnati, Cincinnati, Ohio, USA
Master of Science in Physics

September 2004

RESEARCH EXPERIENCE

- **Postdoctoral Research Associate, Department of Physics and Astronomy, The University of Mississippi, MS,** September 2009 - July 2014.
Working on particle physics phenomenology related to various phenomenological issues involving B physics and CP violation, top physics, and Higgs physics.
- **Doctoral Research, University of Cincinnati, OH,** September 2004 - August 2009.
Thesis Topic: Power Corrections in $e^+e^- \rightarrow M_1 M_2$ and in Charmless Two Body B meson Decays.
Adviser: Dr. Alexander L. Kagan
Investigated the enhancement of penguin amplitude power corrections necessary to explain the observed puzzling results in B meson decays to light meson pairs.

TEACHING EXPERIENCE

- **Instructor,** Department of Physics, Virginia Commonwealth University, Richmond, Virginia 23284.
Taught the following courses:
 - Energy (INSC 201), June 2016- August 2016.
 - Physics of bicycling (UNIV 291), August 2015-December 2015.
 - Energy (INSC 201), January 2016-May 2016.
 - Content of elementary science, January 2016-May 2016.
 - Capstone course for interdisciplinary science majors (INSC 490), January 2016-May 2016.
 - Science, technology, and society (PHYS 215), January 2016-May 2016
 - Energy (INSC 201), August 2015-December 2015.
 - Content of elementary science (INSC 310), August 2015-December 2015.
 - Capstone course for interdisciplinary science majors (INSC 490), August 2015-December 2015.
- **Acting Assistant Professor,** Department of Physics, University of Mississippi, Oxford, MS.
Taught the following courses:
 - Advanced Electromagnetic Theory II (PHYS 722), January 2015-May 2015.
 - Physics for Science & Engineering II (PHYS 212), January 2015-May 2015.
 - Mathematical Methods of Physics (PHYS 308), January 2015-May 2015.
 - Thermal Physics (PHYS 309), January 2015-May 2015.
 - Graduate electromagnetic theory I (PHYS 721), August 2014- December 2015.

- Physics for Science & Engineering I (PHYS 211), August 2014- December 2015.
 - Mechanics (PHYS 310), June 2013- July 2013.
 - Physics for Science & Engineering II (PHYS 212), January 2013- May 2013.
 - Physics for Science & Engineering I (PHYS 211), August 2013- December 2013.
 - Thermal Physics (PHYS 309), August 2013- December 2013.
 - Mathematical Methods of Physics (PHYS 308), January 2013- May 2013.
 - Electromagnetic Theory 1 (PHYS 401), August 2012- Present.
 - Mathematical Methods of Physics (PHYS 308), January 2012- May 2012.
- **Teaching Assistant and Lab Instructor**, Department of Physics, University of Cincinnati, Cincinnati, OH, September 2002- August 2009.

PUBLICATIONS

1. **M. Duraisamy**, S. Sahoo and R. Mohanta, “Rare semileptonic $B_K(lil+j)$ decay in vector leptoquark model,” *e-Print: arXiv:1610.00902 [hep-ph]* (Oct 2016).
2. **M. Duraisamy**, P. Sharma and A. Datta, “The Azimuthal $B \rightarrow D^* \tau^- \bar{\nu}_\tau$ Angular Distribution with Tensor Operators,” *Phys. Rev. D* **90**, no. 7, 074013 (2014), *e-Print: arXiv:1405.3719 [hep-ph]*.
3. J. N. Butler *et al.* [Quark Flavor Physics Working Group Collaboration], “Working Group Report: Quark Flavor Physics,” arXiv:1311.1076 [hep-ex].
4. A. Datta, **M. Duraisamy**, and D. Ghosh, “Explaining the $B \rightarrow K^* \mu^+ \mu^-$ anomaly with scalar interactions,” *Phys.Rev. D89* (2014) 071501, *e-Print:arXiv: 1310.1937 [hep-ph]*(Nov 2013).
5. B. Bhattacharya, A. Datta, **M. Duraisamy**, and D. London, “Searching for New Physics with $\bar{b} \rightarrow \bar{s} B_s \rightarrow V_1 V_2$ Penguin Decays,” *Phys. Rev. D* **88**, 016007 (2013), *e-Print:arXiv: 1306.1911 [hep-ph]*(Jun 2013).
6. **M. Duraisamy**, and A. Datta, The Full $B \rightarrow D^* \tau^- \bar{\nu}_\tau$ Angular Distribution and CP violating Triple Products, *JHEP* **1309**, 059 (2013), *e-Print:arXiv: arXiv:1302.7031 [hep-ph]*(Feb 2013).
7. D. Boubaa, A. Datta, **M. Duraisamy**, S. Khalil, Predictions for $B \rightarrow \tau \bar{\mu} + \mu \bar{\tau}$, *Int.J.Mod.Phys. A28* (2013) 1350153, *e-Print:arXiv: 1211.5168 [hep-ph]*(Nov 2012).
8. D.J. Summers, L.M. Cremaldi, A. Datta, **M. Duraisamy**, T. Luo, G.T. Lyons, A 233 km Tunnel for Lepton and Hadron Colliders, *e-Print:arXiv:1207.7354 [physics.acc-ph]* (Jul 2012).
9. A. Datta, **M. Duraisamy**, and D. London, New Physics in $b \rightarrow s$ Transitions and the $B_{d,s}^0 \rightarrow V_1 V_2$ Angular Analysis, *Phys. Rev. D* **86**, 076011 (2012), *e-Print:arXiv:1207.4495 [hep-ph]* (Jul 2012).
10. A. Datta, **M. Duraisamy**, and D. Ghosh, Diagnosing New Physics in $b \rightarrow c \tau \nu_\tau$ decays in the light of the recent BaBar result, *Phys. Rev. D* **86**, 034027 (2012), *e-Print:arXiv:1206.3760 [hep-ph]* (Jun 2012).
11. J. L. Hewett *et al.*, “Fundamental Physics at the Intensity Frontier,” arXiv:1205.2671 [hep-ex].
12. A. Rashed, **M. Duraisamy**, and A. Datta, Nonstandard interactions of tau neutrino via charged Higgs and W contribution, *Phys. Rev. D* **87**, 013002 (2013), *e-Print: arXiv:1204.2023 [hep-ph]* (Apr 2012).
13. **M. Duraisamy**, A. Rashed, and A. Datta, The Top Forward Backward Asymmetry with general Z' couplings, *Phys. Rev. D* **84**, 054018 (2011), *e-Print:arXiv:1106.5982 [hep-ph]* (Jun 2011).
14. A.K. Alok, A. Datta, A. Dighe, **M. Duraisamy**, D. Ghosh, and D. London, New Physics in $b \rightarrow s \mu^+ \mu^-$: CP-Violating Observables , *e-Print: arXiv:1103.5344 [hep-ph]* (May 2011), to be submitted to *JHEP* .
15. A. Datta, **M. Duraisamy**, and D. London, Searching for New Physics with B-Decay Fake Triple Products , *Phy. Let.B701,357-362*(2011),*e-Print: arXiv:1103.2442 [hep-ph]*.
16. A. Datta, **M. Duraisamy**, and S. Khalil, Like-sign dimuon charge asymmetry in Randall-Sundrum model , *Phys. Rev. D* **83**,094501 (2011), *e-Print: arXiv:1011.5979 [hep-ph]* .
17. A.K. Alok, A. Datta, A. Dighe, **M. Duraisamy**, D. Ghosh, and D. London, New Physics in $b \rightarrow s \mu^+ \mu^-$: CP-Conserving Observables , *e-Print: arXiv:1008.2367 [hep-ph]* (August 2010), to be submitted to *JHEP* .
18. A. Rashed, **M. Duraisamy**, and A. Datta, Probing light pseudoscalar, axial vector states through $\eta_b \rightarrow \tau^+ \tau^-$, *Phys. Rev. D* **82**, 054031 (2010), *e-Print: arXiv:1004.5419 [hep-ph]* .

19. A. Datta, and **M. Duraisamy**, Model Independent Predictions for Rare Top Decays with Weak Coupling, *Phys. Rev. D* **81**, 074008 (2010), e-Print: [arXiv:0912.4785 \[hep-ph\]](#) .
20. C. W. Chiang, A. Datta, **M. Duraisamy**, D. London, M. Nagashima, and A. Szykman, New Physics in $B_s \rightarrow J/\psi\phi$: a General Analysis, *JHEP* **1004:031,2010**, e-Print: [arXiv:0910.2929 \[hep-ph\]](#) .
21. **M. Duraisamy**, and A. Kagan, Power Correction in $e^+e^- \rightarrow \pi^+\pi^-, K^+K^-$ and $B \rightarrow \pi\pi, K\pi$, *Eur.Phys.J. C* **70** (2010) 921-925, e-Print: [arXiv:0812.3162 \[hep-ph\]](#).

Invited talks

22. The Full $B \rightarrow D^*\tau\nu$ Angular Distribution and CP violating Triple Products , Implications of LHCb measurements and future prospects (Oct 14, 2013), LHC, CERN, Switzerland .

Contributed talks

23. CP Conserving and violating observables in the Charmless three body B meson decays $B \rightarrow VP_1P_2$, Pheno 2012 (May 7, 2012), University of Wisconsin, Madison, WI .
24. Like-sign dimuon charge asymmetry in Randall-Sundrum model , Pheno 2011 (May 10, 2011), University of Wisconsin, Madison, WI .
25. Possible CP violation in the charmless three body $B \rightarrow VP_1P_2$ decays , HEP group meeting (July 15, 2010), Department of Physics and Astronomy, The University of Mississippi, University, MS.
26. New Physics in $B_s \rightarrow J/\psi\phi$ and B_s mixing , Pheno 2010 (May 10, 2010), University of Wisconsin, Madison, WI .
27. Higgs to tau tau at the Muon Colliders , NGMCC 2010 Meeting (January 21, 2010), Department of Physics and Astronomy, The University of Mississippi, University, MS.

CONFERENCES ATTENDED

28. 2012 Phenomenology Symposium (PHENO 2012), May 7 , 2012, University of Pittsburgh, Pittsburgh, PA .
29. Fundamental Physics at the Intensity Frontier, November 30, 2011, Rockville, MD.
30. 2011 Phenomenology Symposium (PHENO 2011), May 9, 2011, University of Wisconsin, Madison, WI .
31. Fifth CERN-Fermilab Hadron Collider Physics Summer School, August 16, 2010, Fermilab, Batavia, IL.
32. 2010 Phenomenology Symposium (PHENO 2010), May 10, 2010, University of Wisconsin, Madison, WI .
33. Neutrino Factory and Muon Collider Collaboration Meeting (NGMCC 2010 Meeting), January 21, 2010, Department of Physics and Astronomy, The University of Mississippi, University, MS.
34. Prospects in Theoretical Particle Physics (PITP 2007), July 16, 2007, Institute for Advanced Study, Einstein Drive, Princeton, NJ.
35. Theoretical Advanced Study Institute in Elementary Particle Physics (TASI 2006), June 4, 2006, University of Colorado, Boulder, CO.

SERVICE WORK

- Referee for Physical Review D, IOPScience.

ORGANIZATIONS AND ACTIVITIES

- **Member:** Quark Flavor Physics Working Group Collaboration, November 2011 - Present.
- **Vice President:** Graduate Student Governance Association-Physics, University of Cincinnati, September 2004 - September 2006.