

Deepak Sathyan

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📍 Mitchell Institute for Fundamental Physics and Astronomy, Texas A&M University, College Station, TX

Education

University of Maryland

Ph.D. in Physics

Thesis: Unifying Searches for New Physics with Precision Measurements of the W Boson Mass

Advisor: Dr. Kaustubh Agashe

College Park, MD

Aug 2018 – July 2024

Boston University

Bachelor of Arts in Physics, Summa Cum Laude with Honors

GPA: 3.9

Minor: Mathematics

Thesis: Muon (g-2): Searching for the Muon Electric Dipole Moment

Advisor: Dr. Robert Carey

Boston, MA

Aug 2014 – May 2018

Experience

Postdoctoral Research Associate

Mitchell Institute for Fundamental Physics and Astronomy

Texas A&M University

College Station, TX

Sept 2024 – Aug 2027

3 years

Publications

Producing the GeV Galactic Center Excess via Cosmic Ray-Dark Matter Scattering

B. Dutta, D. Goswami, J. Kumar, M. Rai, D. Sathyan

arxiv.org/abs/2605.08010

May 2026

A Baryon and Lepton Number Violation Model Testable at the LHC

A. Bhoonah, F. Burk, D. Liu, T. Ou, D. Sathyan

arxiv.org/abs/2508.21064

Aug 2025

New Constraints on Neutrino-Dark Matter Interactions: A Comprehensive Analysis

P.S.B. Dev, D. Kim, D. Sathyan, K. Sinha, Y. Zhang

arxiv.org/abs/2507.01000

July 2025

New laboratory constraints on neutrinophilic mediators

P.S.B. Dev, D. Kim, D. Sathyan, K. Sinha, Y. Zhang

arxiv.org/abs/2407.12738 (Phys. Lett. B)

2025

'Unification' of BSM searches and SM measurements: the case of lepton+MET and m_W

K. Agashe, S. Airen, R. Franceschini, D. Kim, A.V. Kotwal, L. Ricci, D. Sathyan

arxiv.org/abs/2404.17574 (JHEP)

2025

A new purpose for the W-boson mass measurement: Searching for New Physics in lepton+MET

K. Agashe, S. Airen, R. Franceschini, D. Kim, A.V. Kotwal, L. Ricci, D. Sathyan

arxiv.org/abs/2310.13687 (Phys. Lett. B)

2024

Unifying Searches for New Physics with Precision Measurements of the W Boson Mass D. Sathyan drum.lib.umd.edu/items/f9b081c8-444a-4af2-b69e-c8156d11a2c9 (Ph.D. Thesis)	2024
Energy-peak based method to measure top quark mass via B-hadron decay lengths K. Agashe, S. Airen, R. Franceschini, J. Incandela, D. Kim, D. Sathyan arxiv.org/abs/2212.03929 (JHEP)	2023
TF07 Snowmass Report: Theory of Collider Phenomena F. Maltoni et al. arxiv.org/abs/2210.02591	Oct 2022
Report of the Topical Group on Physics Beyond the Standard Model at Energy Frontier for Snowmass 2021 T. Bose et al. arxiv.org/abs/2209.13128	Sept 2022
Report of the Topical Group on Top quark physics and heavy flavor production for Snowmass 2021 K. Agashe et al. arxiv.org/abs/2209.11267	Sept 2022
Snowmass2021 - White Paper, Implications of Energy Peak for Collider Phenomenology: Top Quark Mass Determination and Beyond K. Agashe, S. Airen, R. Franceschini, D. Kim, D. Sathyan arxiv.org/abs/2204.02928	Apr 2022
Snowmass2021 White Paper: Collider Physics Opportunities of Extended Warped Extra-Dimensional Models K. Agashe, J.H. Collins, P. Du, M. Ekhterachian, S. Hong, D. Kim, R.K. Mishra, D. Sathyan arxiv.org/abs/2203.13305	Mar 2022
The straw tracking detector for the Fermilab Muon g-2 Experiment B.T. King et al. arxiv.org/abs/2111.02076 (JINST)	2022
Measurement of the Positive Muon Anomalous Magnetic Moment to 0.46 ppm Muon g-2 Collaboration arxiv.org/abs/2104.03281 (Phys. Rev. Lett.)	2021
Beam dynamics corrections to the Run-1 measurement of the muon anomalous magnetic moment at Fermilab Muon g-2 Collaboration arxiv.org/abs/2104.03240 (Phys. Rev. Accel. Beams)	2021
LHC Signals for KK Graviton from an Extended Warped Extra Dimension K. Agashe, M. Ekhterachian, D. Kim, D. Sathyan arxiv.org/abs/2008.06480 (JHEP)	2020

Seminars

Unification of Searches and Measurements: Probing BSM with the W boson mass measurement
CMS Exotica general meeting, May 2024

A New Purpose A New Purpose for the W-mass Measurement: Searching for New Physics via l + MET

Theory Seminar at Washington University in St. Louis, October 2023

HEP Seminar at Northwestern University, October 2023

HEP Seminar at University of Pittsburgh, November 2023

CMS SUSY general meeting, November 2023

Seminar at UT Austin, December 2023

Seminar at Texas A&M, December 2023

Conference Talks

Can the LHC be sensitive to the Light Dark World?

Light Dark World 2026 at Carleton University, July 2026

Producing the GeV Galactic Center Excess via Cosmic Ray-Dark Matter Scattering

CETUP* Workshop, June 2026

A Baryon and Lepton Number Violation Model Testable at the LHC

Particle Physics on the Plains at the University of Kansas, November 2025

Can the LHC be sensitive to light dark mediators?

Phenomenology Conference at the University of Pittsburgh, May 2025

CETUP* Workshop, June 2025

A comprehensive analysis of supernova neutrino-dark matter interactions

Mitchell Conference at Texas A&M University, May 2024

NuFact Conference, September 2024

Texas TACOS @ UT Austin, October 2024

Particle Physics on the Plains at the University of Kansas, November 2024

A New Purpose for the W-mass Measurement: Searching for New Physics via l + MET

Particle Physics on the Plains at the University of Kansas, October 2023

Probing Dark Matter-Neutrino Interactions via Supernova Neutrinos

Phenomenology Conference at the University of Pittsburgh, May 2023

Model-Independent Measurement of Top Quark Mass Using B-Hadron Decay Lengths (Part I)

Phenomenology Conference at the University of Pittsburgh, May 2022

Signals of KK graviton from extended warped extra dimensions at the LHC (II)

Phenomenology Conference at the University of Pittsburgh, May 2020

April APS Meeting, April 2021

Projects

BSM Searches via W Boson Mass

Jan 2020 – July 2024

Developed a framework unifying beyond-the-Standard-Model searches with precision measurements of the W boson mass at the LHC.

Muon g-2 Experiment

Aug 2018 – Jan 2022

Contributed to the straw tracking detector and beam dynamics corrections for the Fermilab Muon g-2 experiment, which measured the muon anomalous magnetic moment to 0.46 ppm.

Conferences Organized _____

The Mitchell Conference on Collider, Dark Matter, and Neutrino Physics 2026

Texas A&M University, May 27-30, 2026

The Mitchell Conference on Collider, Dark Matter, and Neutrino Physics 2025

Texas A&M University, May 13-16, 2025

Awards _____

Breakthrough Prize in Fundamental Physics

Apr 2026

Muon g-2 Collaboration

Schools Attended _____

GGI Lectures on the Theory of Fundamental Interactions

Jan 2023 – Jan 2023

TASI 2024: The Frontiers of Particle Theory

June 2024 – June 2024

Skills _____

High Energy Physics

Computing