



Rebecca K Leane

Staff Scientist, SLAC National Accelerator Laboratory

Professional

WORK EXPERIENCE

- Postdoctoral Researcher - MIT Center for Theoretical Physics (2017 - 2020)

Publications

PUBLICATIONS

- **Dark Matter Induced Power in Quantum Devices.** *Physical review letters*
Das, A., Kurinsky, N., Leane, R. K.
2024; 132 (12): 121801
- **Milky Way white dwarfs as sub-GeV to multi-TeV dark matter detectors** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Acevedo, J. F., Leane, R. K., Santos-Olmsted, L.
2024
- **Dark matter capture in celestial objects: treatment across kinematic and interaction regimes** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Leane, R. K., Smirnov, J.
2023
- **Snowmass2021 cosmic frontier white paper: Ultraheavy particle dark matter** *SCIPOST PHYSICS CORE*
Carney, D., Raj, N., Bai, Y., Berger, J., Blanco, C., Bramante, J., Cappiello, C., Dutra, M., Ebadi, R., Engel, K., Kolb, E., Harding, J., Kumar, et al
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- **First Analysis of Jupiter in Gamma Rays and a New Search for Dark Matter.** *Physical review letters*
Leane, R. K., Linden, T.
2023; 131 (7): 071001
- **New approaches to dark matter detection** *NATURE REVIEWS PHYSICS*
Hochberg, Y., Kahn, Y. E., Leane, R. K., Rajendran, S., Van Tilburg, K., Yu, T., Zurek, K. M.
2022
- **Snowmass2021 theory frontier white paper: Astrophysical and cosmological probes of dark matter** *JOURNAL OF HIGH ENERGY ASTROPHYSICS*
Boddy, K. K., Lisanti, M., McDermott, S. D., Rodd, N. L., Weniger, C., Ali-Haïmoud, Y., Buschmann, M., Cholis, I., Croon, D., Erickcek, A. L., Gluscevic, V., Leane, R. K., Mishra-Sharma, et al
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- **Tidal Love numbers of novel and admixed celestial objects** *Physical Review D*
Collier, M., Croon, D., Leane, R. K.
2022
- **Celestial-body focused dark matter annihilation throughout the Galaxy** *PHYSICAL REVIEW D*

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- Leane, R. K., Linden, T., Mukhopadhyay, P., Toro, N.
2021; 103 (7)
- **Exoplanets as Sub-GeV Dark Matter Detectors** *PHYSICAL REVIEW LETTERS*
Leane, R. K., Smirnov, J.
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 - **Supernova Muons: New Constraints on Z' Bosons, Axions and ALPs** *JOURNAL OF HIGH ENERGY PHYSICS*
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2021
 - **Spurious Point Source Signals in the Galactic Center Excess** *PHYSICAL REVIEW LETTERS*
Leane, R. K., Slatyer, T. R.
2020; 125 (12): 121105
 - **The enigmatic Galactic Center excess: Spurious point sources and signal mismodeling** *PHYSICAL REVIEW D*
Leane, R. K., Slatyer, T. R.
2020; 102 (6)
 - **A systematic study of hidden sector dark matter: application to the gamma-ray and antiproton excesses** *JOURNAL OF HIGH ENERGY PHYSICS*
Hooper, D., Leane, R. K., Tsai, Y., Wegsman, S., Witte, S. J.
2020
 - **Warming nuclear pasta with dark matter: kinetic and annihilation heating of neutron star crusts** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Acevedo, J. F., Bramante, J., Leane, R. K., Raj, N.
2020
 - **Revival of the Dark Matter Hypothesis for the Galactic Center Gamma-Ray Excess** *PHYSICAL REVIEW LETTERS*
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 - **Constraints on spin-dependent dark matter scattering with long-lived mediators from TeV observations of the Sun with HAWC** *PHYSICAL REVIEW D*
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 - **GeV-scale thermal WIMPs: Not even slightly ruled out** *PHYSICAL REVIEW D*
Leane, R. K., Slatyer, T. R., Beacom, J. F., Ng, K. Y.
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 - **Enhancing dark matter annihilation rates with dark bremsstrahlung** *PHYSICAL REVIEW D*
Bell, N. F., Cai, Y., Dent, J. B., Leane, R. K., Weiler, T. J.
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 - **Powerful solar signatures of long-lived dark mediators** *PHYSICAL REVIEW D*
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 - **Impact of mass generation for spin-1 mediator simplified models** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
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 - **Dark forces in the sky: signals from Z' and the dark Higgs** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
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2016

- **Mono-W dark matter signals at the LHC: simplified model analysis** *JOURNAL OF COSMOLOGY AND ASTROPARTICLE PHYSICS*
Bell, N. F., Cai, Y., Leane, R. K.
2016
- **Dark matter at the LHC: Effective field theories and gauge invariance** *PHYSICAL REVIEW D*
Bell, N. F., Cai, Y., Dent, J. B., Leane, R. K., Weiler, T. J.
2015; 92 (5)
- **Leptophilic dark matter with Z' interactions** *PHYSICAL REVIEW D*
Bell, N. F., Cai, Y., Leane, R. K., Medina, A. D.
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