

COLLOQUIUM

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The Search For Axion Dark Matter

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Abstract:

Axions are some of the best-motivated beyond the Standard Model particle candidates at present. These ultralight particles may account for the cosmological dark matter and explain other outstanding problems in nature, such as the strong-CP problem; they also are now known to emerge generically in string theory. Axions are expected to couple ultraweakly with ordinary matter, which complicates their detection. However, thanks to recent theoretical, experimental, and observational progress these particles may be discovered or ruled out within the near future. I will review some of the recent ideas that may soon play a role in axion discovery, including computing the evolution of axions in the early universe using supercomputers and novel observational signatures of axions that emerge in extreme astrophysical environments such as supernovae.

Biography:

Prof. Benjamin Safdi received his undergraduate degree from the University of Colorado at Boulder, a Master of Advanced Study from Cambridge University, as a Churchill Scholar, and his PhD from Princeton University in 2014. He was then a Pappalardo Fellow in physics at the Massachusetts Institute of Technology until 2017, when he started as an assistant professor at the University of Michigan, Ann Arbor. Dr. Safdi moved to LBNL in 2020 and then to UC Berkeley

in 2021.