

Searching for Invisible Dark Matter Deep Underground



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Why do Particle Physics Research?

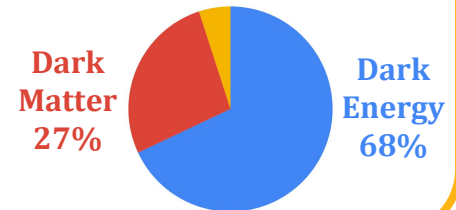
Historically, particle physics research has led to a number of technological breakthroughs, including the World Wide Web, nuclear monitoring techniques, and PET scans. This research has also been a boon to fields like materials science, medical treatment, and drug development.

What is our Universe Made Of?

The universe is composed of atoms, which make up galaxies, stars, planets, even you and me. But this only accounts for 5% of the universe's total composition. Much of the remainder is **dark matter**, a type of matter that has mass and interacts with gravity, but not with light. Dark matter is one of the biggest unsolved problems in physics; as a key ingredient in the history of the universe, it is critical to the development of life itself! In my research, I try to answer the question: what is the smallest particle of dark matter?

Our Universe

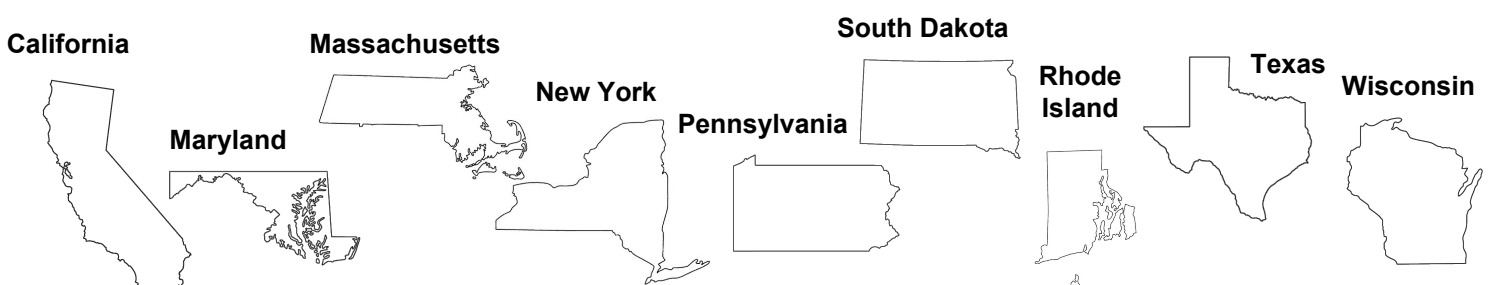
Normal Matter 5%



Searching for Dark Matter

We try to observe rare collisions of dark matter particles and atoms by building extraordinarily sensitive detectors. One experiment I work on is the Large Underground Xenon (LUX) experiment ¹, located **one mile underground** at the Sanford Underground Research Facility in Lead, South Dakota.

LUX is a 100-person collaboration, including scientists from universities and national labs in these states:



In California alone, the following institutions have members on LUX: Lawrence Berkeley National Lab; Lawrence Livermore National Lab; SLAC National Accelerator Lab; UC Berkeley; UC Davis; UC Santa Barbara; California State University, Stanislaus; and Stanford University.

¹ Disclaimer: This document was prepared by me and does not represent the views of the LUX Collaboration.

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