

The next generation of Cosmic Microwave Background experiments

The cosmic microwave background (CMB) – relic radiation from soon after the Big Bang – contains a wealth of information on the structure, evolution, and underlying physics of our Universe. Data taken from surveying the CMB has helped to inform and constrain many different models across numerous frontiers in physics, from theories of cosmic inflation, to uncovering the nature of dark matter. The sensitivity of CMB survey experiments has exploded over the past decade, thanks in part to advancements in multichroic pixel design, and huge increases to the number of detectors that can be installed into a single focal plane array. This upward trajectory continues today, with several of the next-generation CMB survey instruments being developed at Fermilab. I will provide a brief overview of our work on three of these upcoming experiments, SPT-SLIM, SPT-3G+, and CMB-S4, and touch on some of the new exciting physics we aim to uncover with each instrument.

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