

Spider Sense: Detecting the Inflation of our Universe

Professor of Physics Jamie Bock hopes the baffle tube he's peering through in the photo below will help him also peer into the early universe. The baffle tube is a component of one of the six telescopes on one of his recent projects, called Spider, which Bock will use to study the inflationary expansion of the universe, an event that is thought to have occurred just a fraction of a second after the Big Bang. Spider's instruments will search the thermal radiation, a fossil relic of the Big Bang, for polarization signals—a telltale signature of background gravitational waves produced by the inflationary expansion. "Inflation is thought to have happened just 10^{-32} seconds after the Big Bang. To think that we might be able to measure something from that period is rather mind blowing," Bock says.

If all goes as planned, Spider will begin a two-week voyage in late December 2014, first launching in a balloon from Antarctica's McMurdo Station and then circumnavigating the continent. Bock hopes a successful Spider mission will lay the technical and observational foundation for future orbital missions dedicated to understanding the origin of the cosmos. —JSC

