ACT

Atacama Cosmology Telescope

Using a millimeter-wave telescope in the Atacama Desert of Northern Chile to make high-resolution measurements of the Cosmic Microwave Background (CMB), the first observable light from the early universe.

ALICE

A Large Ion Collider Experiment

Probing states of matter by colliding heavy nuclei at high energies to create a hot, dense, primordial medium (quark-gluon plasma); studying the effects of particle jets as they pass through the plasma.

ALPHA

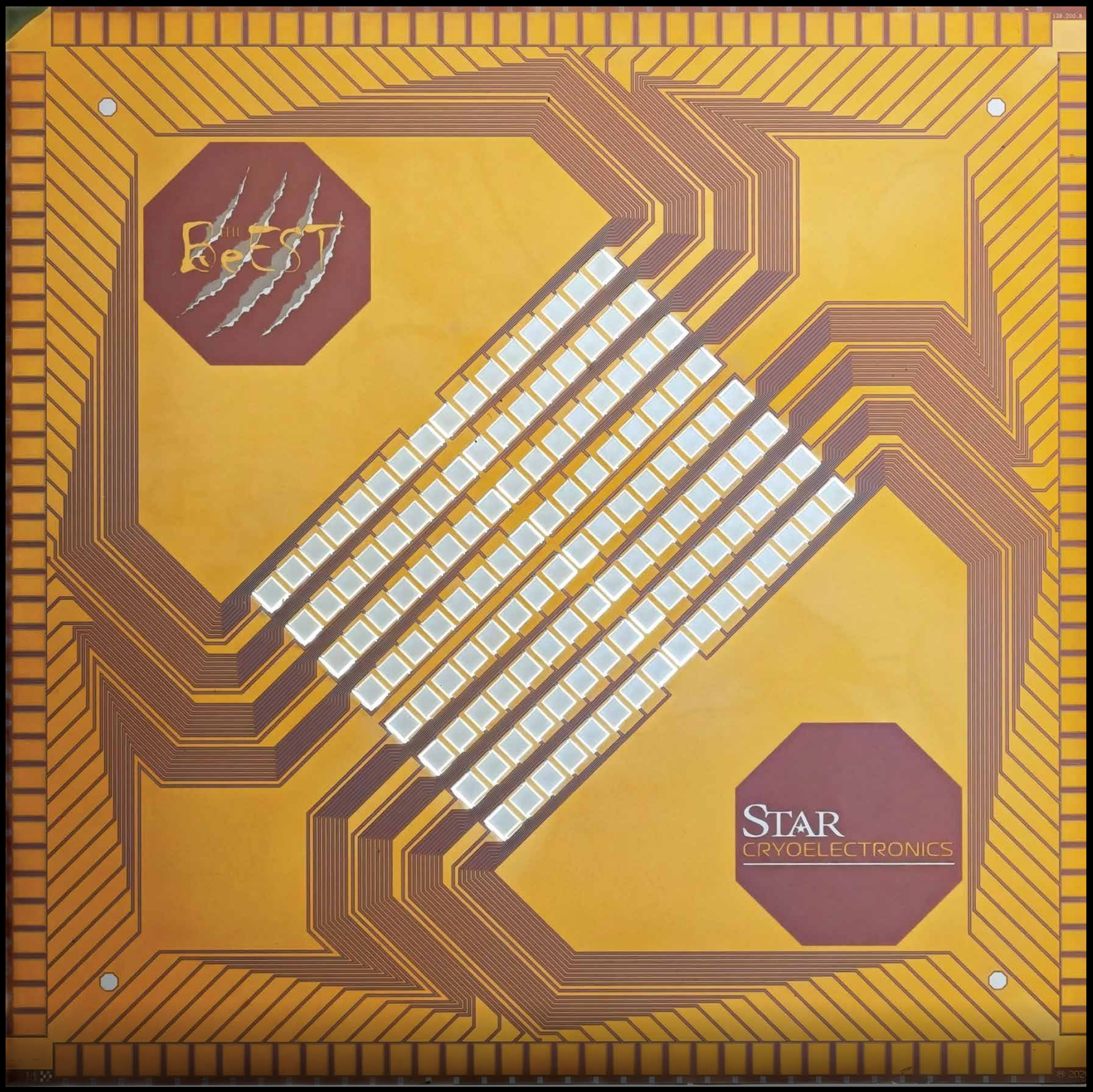
Axion Longitudinal Plasma HAloscope

Combining a novel plasma resonator, microwave readout, and quantum technologies to search for axions, a dark matter candidate.

ATLAS

A Toroidal LHC ApparatuS

Using hadron collisions to probe the properties of the Higgs boson and search for new physics leveraging detector upgrades for the High Luminosity Large Hadron Collider.



BeEST

Beryllium Electron capture in Superconducting Tunnel Junctions Experiment

Searching for sterile neutrinos by reconstructing nuclear recoils from the decay of beryllium-7 implanted in superconducting sensors.

CHIME

Canadian Hydrogen Intensity Mapping Experiment

Observing the sky with a novel radio telescope to measure the expansion of the universe by making a high-fidelity 3D map of the density of hydrogen, the most abundant element.

COSINE-100

Searching for the annual modulation variation in the dark matter signal when it hits ultrapure sodium iodide scintillating crystals.

CUORE and CUPID

Cryogenic Underground Observatory for Rare Events / CUORE Upgrade with Particle IDentification

Searching for neutrinoless double beta decay in Te-130 and other rare events using bolometric detectors operating at temperatures close to absolute zero in Gran Sasso National Laboratory.

Daya Bay

Daya Bay Reactor Neutrino Experiment

Measuring reactor antineutrino oscillations for the first and most precise measurement of the neutrino mixing angle Θ_{13}.

DESI

Dark Energy Spectroscopic Instrument

Creating the world's largest 3D map of 30 million galaxies using a spectrometer to precisely measure the effects of dark energy on the expansion of the universe.

DM-Ice

Dark Matter in Ice Experiment

Deploying ultrapure sodium iodide crystals deep in the Antarctic ice to directly detect dark matter and measure its annual modulation signal.

Drone Calibration

Using drones to measure the beam shape of radio telescopes to understand how telescopes see the sky and measure the entire 14 billion-year history of the universe.

DUNE and ProtoDUNE

Deep Underground Neutrino Experiment

Measuring neutrino oscillations over about 1,300 kilometers using a high-energy neutrino beam traveling from Fermilab in Illinois to the Sanford Underground Research Facility in South Dakota.

ProtoDUNE, a prototype of the DUNE neutrino detector, is a large-scale liquid argon time projection chamber built at CERN in Switzerland.

EIC/ePIC & R&D

Electron-Ion Collider / Electron-Proton/Ion Collider

Developing a new high-energy electron-ion collider to understand how quarks and gluons bind to make up visible matter.

EXO-200

The Enriched Xenon Observatory

Imaging nuclear decays and particle interactions in a liquid xenon Time Projection Chamber (TPC) to search for neutrinoless double beta decay of ^{136}Xe and to probe whether neutrinos are Majorana particles.

HAYSTAC

Haloscope At Yale Sensitive To Axion CDM

Using a resonant cavity in a magnetic field to search for axion candidates of dark matter in the Milky Way's galactic halo.

HIRAX

Hydrogen Intensity Mapping and Real-time Analysis eXperiment

Mapping the southern sky with a large radio telescope array to measure the expansion of the universe and understand the nature of dark energy.

IceCube

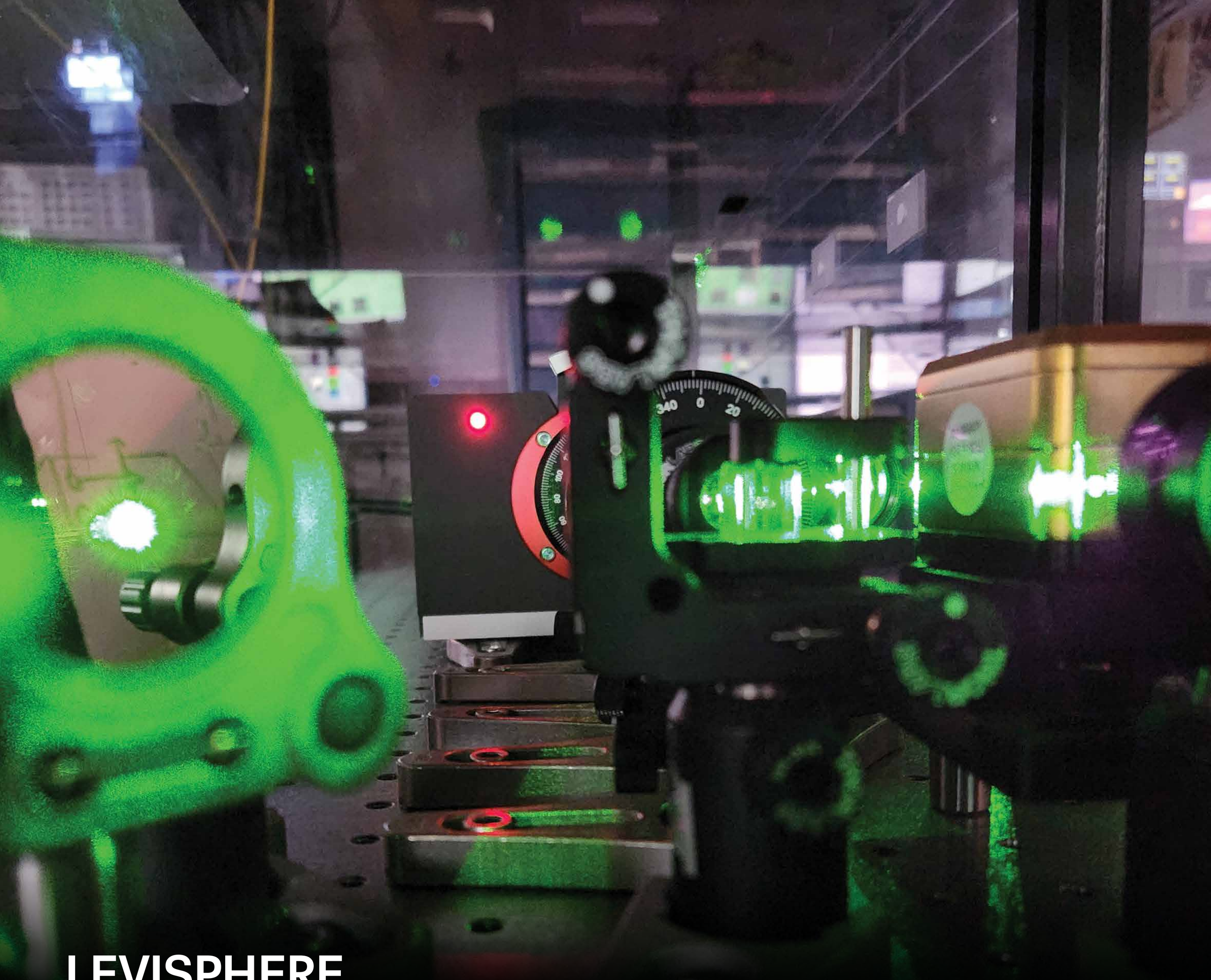
IceCube Neutrino Observatory

Using a 2,500-meter-deep particle detector made of Antarctic ice to study particles that result when otherwise undetectable neutrinos or cosmic rays from sources like exploding stars, gamma-ray bursts, black holes, and neutron stars interact with the ice.

La Silla-QUEST / LS4

La Silla-QUEST Southern Hemisphere Variability Survey / La Silla Schmidt Southern Survey

Using supernovae and variable stars as calibration standards to study the expansion of the universe and dark energy and improve the precision of the Hubble constant measurement.



LEVISPHERE

LEVItated SuPerfluid Helium Research

Exploring the quantum mechanics of and topological effects on the motion of macroscopic objects by using lasers to levitate a drop of liquid helium for extended periods.

MAST-QG

Macroscopic Superpositions Towards witnessing the Quantum nature of Gravity

Levitating tiny diamonds in a vacuum to probe their entanglement and test whether gravity has a quantum nature.

Mu2e

Muon-to-Electron Conversion Experiment

Searching for new physics by seeking evidence of the conversion of a muon directly to an electron in the field of a nucleus, a process that is suppressed in the Standard Model.

PROSPECT

Precision Reactor Oscillation SPECTrum experiment

Measuring antineutrinos emitted by the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory to search for sterile neutrinos and develop technology to monitor reactors for nuclear safeguards and non-proliferation.

Project 8

Measuring the mass of the neutrino by studying tritium beta decay with a novel technique called Cyclotron Resonance Emission Spectroscopy (CRES).

RAY

Rydberg Atoms at Yale

Leveraging the unique sensitivities of Rydberg atoms to detect single microwave photons from axion conversion in the search for dark matter.

Roman Space Telescope

Studying the acceleration of the expansion of the universe and dark energy by observing a large sample of supernovae.

Simons Observatory

Probing the Cosmic Microwave Background (CMB) using millimeter-wavelength radio telescopes in Chile to understand the beginning of the universe.

SIMPLE/QuIPS

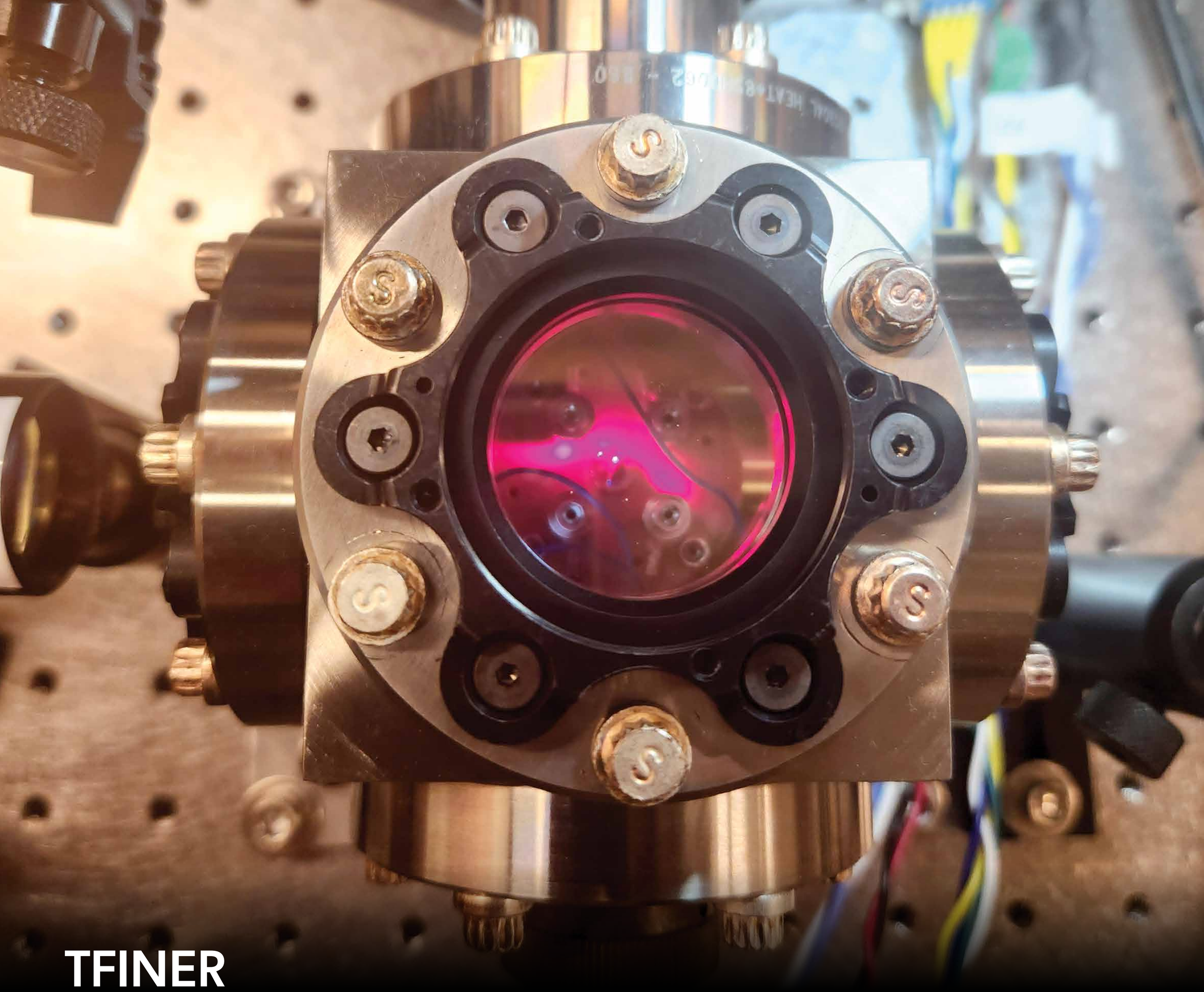
Search for new Interactions in a Microsphere Precision Levitation Experiment / Quantum Invisible Particle Search

Using some of the world's most precise force sensors to study interactions involving neutrinos, test gravity, search for dark matter, and probe new forces and quantum phenomena.

STAR

Solenoidal Tracker at RHIC

Using high-energy collisions of nuclei to understand the behavior of the strong force, which holds all atomic nuclei together, under extremes of temperature and density.



TFINER

Thin Film Isotope Nuclear Engine Rocket

Developing a spacecraft propulsion system based on the ejection of alpha particles from nuclei within a specially designed sail.