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Find your astronomical passion

Cosmology

UC San Diego excels in studying the origins of the universe through the development of new cosmic microwave background experiments led by **Kam Arnold** and **Brian Keating**, and theoretical cosmology and fundamental physics by **Raphael Flauger** and **Dan Green**.

Galaxy Formation & Evolution

Alison Coil and **Shelley Wright** study high-redshift galaxies and supermassive black holes to better understand how they form and evolve. **David Tytler** studies big-bang nucleosynthesis with measurements of quasar absorption line systems. **Dusan Keres** and **Michael Norman** use hydrodynamical simulations to investigate the physics of galaxy formation.

Particle Astrophysics & Dark Matter

George Fuller investigates neutrino physics in supernova core collapse and the early universe. **Tongyan Lin,** investigates computational and theoretical methods for testing properties of dark matter

Stars, Exoplanets, & Astrobiology

Adam Burgasser studies the spectra of the coldest stars, brown dwarfs and exoplanets. **Quinn Konopacky** studies the orbits and atmospheres of exoplanets. **Shelley Wright** designs and operates optical SETI experiments

Star Formation & the ISM

Karin Sandstrom uses multi-wavelength observations of nearby galaxies to study star formation and the properties of the interstellar medium. **Quinn Konopacky** studies nearby star-forming regions at high resolution.

Solar & Plasma Physics

Pat Diamond uses theory to explore magnetic dynamos, accretion processes, and turbulent plasma flows

High Energy Astrophysics

Steven Boggs is a gamma-ray observer who conducts detailed measurement of radioactive nuclei produced in supernova explosions.

Learn new tools to study the Universe

Observation

UCSD observers have access to **Lick Observatory**, **Keck Observatory**, and in the future the **Thirty Meter Telescope**. Observational researchers also make use of best facilities on and off the planet, including the *Hubble Space Telescope*, the *James Webb Space Telescope*, *Chandra*, JVLA, ALMA, CHARA, and others.

Computation

UCSD is home to the **San Diego Supercomputer Center** (SDSC) which is enables advanced high-performance computing. The **Halıcıoğlu Data Science Institute** brings together researchers and students interested in data science.

Instrumentation

The **Cosmology Group** maintains multiple laboratories aimed at developing new technologies and instrumentation for CMB detection with the Simons Observatory and LiteBIRD. The **Optical and Infrared Laboratory** develops facility-class instruments for large telescopes, including Keck and TMT.

Theory

UCSD is a partner in the **N3AS Collaboration** - the Network for Neutrinos, Nuclear Astrophysics, and Symmetries, which aims to develop the theory tools for interpreting observations of some of Nature's most extreme environments.