

# CSES Currently Funded Projects 2018

## Astrophysics, Cosmology (Focus Lead: Hui Li, T-2 & Chris Fryer, CCS-2)

- **PI: Patrick Harding** Searching for Dark Matter in the Galactic Center with HAWC
- **PI: Kirk Flippo** Creating an Astrophysically Relevant Magnetic Dynamo in the laboratory
- **PI: Mark Parris** Quantum Effects of Cosmological Observations as a Probe of BSM & Nuclear Physics
- **PI: Fan Guo** Kinetic Processes of Particle Acceleration and Radiation in Relativistic Astrophysical Plasma Outflows
- **PI: A. Corray/J.Smidt** Primordial Explosions and Black Holes: Direct and Indirect Signatures in Deep Sky Image
- **PI: Przemek Wozniak** Automated Selection and Characterization of Explosive Astrophysical Transients; Modern Data Analytics meets computational physics models
- **PI: Emil Mottola** Fundamental Physics with HAWC: TeV Gamma-Rays from Extragalactic Sources
- **PI: Chengkun Huang** Autonomic MHD closure for the turbulent magnetized plasmas in Astrophysics
- **PI: Lisa Winter** LANL Involvement in the Advanced X-Ray Imaging Satellite NASA Probe Mission

## Earth Sciences (Focus Lead: Keeley Costigan, EES-16)

- **PI: Dubey Mavindra** Scaling Missing State to Predict Properties of Carbonaceous aerosols: From Laboratory to field to Climate Models
- **PI: Matthew Hecht** Climate System Response as Understood Through a Novel Analysis of Ocean Circulation and Energetics
- **PI: Carmela Veneziani** High-Resolution Earth System Model (ESM) Simulation
- **PI: Kurt Solander** The threshold of ignition: changes in wildlife spread tipping points under future hydrology and climate
- **PI: Daniella Marias** Advancing forest Carbon and water remodeling with plant physiology
- **PI: Anastasia Piliouras** Sea ice sediment entrainment during spring flood conditions
- **PI: Tirtha Banerjee** Modeling disturbance effects on tropical forests
- **PI: Devin Goodsmann** Vegetation-insect Dynamics under global Warming
- **PI: Sanna Sevanto** Plant Acclimation to Warming Climate
- **PI: Alexandra Jonko** Can Chaos theory help us better model wildland fires?

## Space (Focus Lead: Geoffrey Reeves, ISR-1)

- **PI: William Daughton** Kinetic Electron Dynamics of Asymmetric Reconnection
- **PI: Yue Chen** Listen to the Canary: Understanding and Utilizing a Storm Precursor in Low-Earth-Orbit
- **PI: Andrew Walker** DREAM Capability Demonstration Utilizing Van Allen Probe Space Environment Data
- **PI: Herb Funsten** IMAP Development
- **PI: Suzanne Nowicki** Thermal neutron flux characterization at aircraft altitudes with the TinMan Detector
- **PI: Katryna Yakymenko** Wave-Particle interactions in the near-Earth environment
- **PI: Jesse Woodrooffe** Understanding the Heliophysics Decadal Strategy and its Relationship to LANL Strategic Priorities
- **PI: Vania Jordanova** Developing a Plan to Meet the Nation's Space Weather Needs
- **PI: Katherine Mesick** Engagement in LunaH-Map Mini-NS Detector Calibration
- **PI: Rollin Lakis** A drone-based gamma ray imaging system for application to Mars
- **PI: Kari Sentz** Hard and soft data fusion for signature discovery
- **PI: Daniel Coupland** Analysis of Lunar Prospector data to constrain the neutron lifetime
- **PI: Bruce Carlsten** Experiments probing the non-linear physics of the interaction between a relativistic electron beam and magnetized plasma

## Geophysical (Focus Lead: David Coblenz, EES-17)

- **PI: Youzuo Lin** Next Generation Microseismic Event Detection
- **PI: Satish Karra** Enabling Kilometer-Scale Simulations of Thermo-Hydro Mechano-Chemical (THMC) Coupled Processes in Fractured Rock Masses
- **PI: P. Johnson** Probing the Critical Stress state in Earth's Crust via induced Seismicity and fluid injection
- **PI: C. Rowe** 3-D Mapping of Shallow Targets Using Microgravity and Cosmic Ray Muons
- **PI: Maruti Mudunuru** Reduced-Order Models for Subsurface Sensing using internet of Things (IoT) Devices
- **PI: C. Rowe** Exploring Local Earthquake Detection and Location Using a Seismic Array in Lieu of a Network.
- **PI: Artaches Migdissov** Resolving the rare earth crisis:
- **PI: Patrick Gasda** The Dynamic Albedo of Neutrons (DAN) Instrument