

# CSES Currently Funded Projects - FY21

## Astrophysics, Cosmology (Focus Lead: Chris Fryer, CCS-2)

PI	Group	Program	Title
Matthew Mumpower	T-2	Rapid Response R&D	Nuclear data for astrophysics on the eve of FRIB
Chengkun Huang	T-5	Student Fellow	Machine Learning Framework for Turbulence <sup>3</sup> Sub-Grid Modeling in Core-Collapse Supernovae
Patrick Killian	T-2	Chick Keller PD	Kinetic Studies of Magnetic Turbulence, Dissipation and Particle Energization
Hui Li	T-2	Student Fellow	Addressing New Challenges to Planet Formation Revealed by ALMA
Joyce Guzik	XTD-NTA	Student Fellow	Magnetic Red-Giant Stars in Binary Star Systems: Opening a Window into Stellar Interiors

## Earth Systems (Focus Lead: Sanna Sevanto, EES-14)

PI	Group	Program	Title
Matthew Maltrud	CCS-2	Student Fellow	Climate System Response as Understood Through a Novel Analysis of Ocean Circulation and Energetics
Scott Elliott	CCS-2	Student Fellow	Arctic River-Delta-Coastal Chemistry in the DOE Hierarchy of Models
Sanna Sevanto	EES-14	Student Fellow	Micron-level Spatial Resolution Gene Expression for Plants
Carolyn Begeman	T-3	Chick Keller PD	Large Eddy Simulation of the Sub-ice-shelf Oceanic Boundary Layer
Yu Zhang	EES-14	Rapid Response R&D	The hydrologic and climatic regulations on coastal forest mortality under climate change
Patrick Conry	A-1	Rapid Response R&D	A complex-terrain challenge: Evaluating LANL's fast-response wind models with a new dataset
Turin Dickman	EES-14	Rapid Response IPD	Linking observations of fire and ecology for improved prescribed fire prediction

## Space (Focus Lead: Vania Koleva Jordanova, ISR-1)

PI	Group	Program	Title
William Daughton	XTD-PRI	Student Fellow	Comparative Studies of Magnetic Reconnection in Kinetic Simulations, Laboratory Experiments and Magnetospheric Observations
Jeffrey Broll	ISR-1	Chick Keller PD	Positron-Emission Tracing of Magnetotail Evolution (PETME): An Investigation of Magnetotail Energy Storage and Topology
Gian Luca Delzanno	T-5	Student Fellow	Kinetic plasma turbulence at low electron beta
Katherine Mesick	ISR-1	Large University	LANL/ASU Student Fellow Partnership in Planetary Nuclear Spectroscopy
Fan Guo	T-2	Rapid Response R&D	Modeling Solar Flare Magnetic Reconnection and Particle Acceleration

## Geophysical (Focus Lead: Charlotte Anne Rowe (Char), EES-17)

PI	Group	Program	Title
Youzuo Lin	EES-17	Student Fellow	Next Generation Microseismic Event Detection
Artaches Migdissov	EES-14	Student Fellow	REE in Hydrothermal Systems: From Ore Formation to Industrial Extraction
Christopher Ren	ISR-3	Chick Keller PD	Earthquake Interaction
Esteban Rougier	EES-17	Large University	Correlating Damage, Fracture and Permeability Enhancement in Rocks subjected to High Strain Rate Loading
Christopher Alcorn	EES-14	Rapid Response R&D	Hydrothermal Transport of RadioIodine and Implications in the Detection of Clandestine Underground Nuclear Events
Chelsea Neil	EES-14	Rapid Response R&D	Revealing the molecular mechanisms controlling enhanced oil recovery in shale
Satish Karra	EES-16	Rapid Response R&D	Linking machine learning with LANL high-performance computing codes for subsurface applications

## Planetary (Focus Lead: Lisa Danielson, ISR-2)

PI	Group	Program	Title
Carene Larmat	EES-17	Student Fellow	How hard should Mars be hit so Insight SEIS can unravel its hidden history?

Dylan Harp	EES-16	Rapid Response R&D	Leveraging martian subsurface methane release data to inform models of gas release from clandestine nuclear testing
Carene Larmat	EES-16	Rapid Response R&D	Modeling of the entry of Mars 2020
Wendy Caldwell	XCP-1	Chick Keller PD	Modeling Impacts on Rocky Asteroids for Potentially Hazardous Object Mitigation
Maria Pinilla	ISR-1	Chick Keller PD	Development of Autonomous System to Detect Water and Raw Materials
Katherine Mesick	ISR-1	Rapid Response IPD	Influencing future planetary science priorities through contributing decadal white papers
Catherine Plesko	XCP-5	Rapid Response IPD	Proposal Development for a NASA ROSES Proposal on Meteoritic Equations of State

### Biological Systems (Focus Lead: Jeanne Fair, B-10)

PI	Group	Program	Title
Amanda Evans	B-11	Student Fellow	Continuous Flow ISRU Biocatalytic Generation of Green Propellants for Space Travel
Kelli Feeser	B-11	Rapid Response R&D	Aboveground-belowground linkages across the Antarctic Peninsula
Emma Goldberg	T-6	Rapid Response R&D	Identifying SARS-CoV-2 transmission from within-host genetic diversity
Marie Kroeger	B-11	Chick Keller PD	Unlocking Microbiome Engineering Potential for Food Security

### Special Rapid Response – Research in Microgravity R&D Projects

PI	Group	Program	Title
Jennifer Hollingsworth	MPA-CINT	Special Rapid Response R&D	Shooting for the Stars: Opening New Dimensions for Metal-Organic Frameworks