

CSES Currently Funded Projects - FY22

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

PI	Group	Program	Title
Thomas Vestrand	ISR-2	Rapid Response IPD	FY 22 MIDEX Proposal
Chengkun Huang	T-5	Student Fellow	Machine Learning Framework for Turbulence ³ Sub-Grid Modeling in Core-Collapse Supernovae
Hui Li	T-2	Rapid Response R&D	A New Coupled Gas Chemistry and Dust Growth Modeling Capability for Protoplanetary Disks
Wendell Misch	T-2	Rapid Response R&D	Observational impact of nuclear isomers in a kilonova afterglow
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
James Gattiker	CCS-6	Rapid Response IPD	CO ₂ Variability and Impact to Direct Air Capture
Matthew Maltrud	CCS-2	Student Fellow	Climate System Response as Understood Through a Novel Analysis of Ocean Circulation and Energetics
Eunmo Koo	EES-16	Student Fellow	An Adaptive Mesh Scheme and Ignition-base Fire Model for the Simulation of Megafires
Alexandra Jonko	EES-16	Student Fellow	Chaotic Qualities of Wildland Fires for Better Land Management
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	Rapid Response R&D	Enabling Artificial Intelligence in the Energy Exascale Earth System Model
Allison Aiken	EES-14	Rapid Response R&D	Post-Detonation Forensics Aerosol Soot Chemical Signatures
Jesse Canfield	XCP-4	Rapid Response R&D	A Lagrangian Pyrocumulonimbus Physics Package in HiGrad

Evan Thaler	EES-14	Chick Keller PD	Quantifying the Influence of Permafrost Soil Erosion on the Global Carbon Cycle
Kurt Solander	EES-16	Rapid Response IPD	GERD Manuscript Development

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

PI	Group	Program	Title
Christopher Jeffery	ISR-2	Rapid Response IPD	Coupling DREAM to GeoRad to enable Prediction of Arctic Communication Disruptions
Rebecca Holmes Sandoval	ISR-2	Rapid Response IPD	Fielding an all-sky monitor in Alaska for aurora science and space traffic management
Misa Cowee	ISR-1	Rapid Response IPD	Frontier in Physics in Astronomy
Xuan-Min Shao	ISR-2	Student Fellow	Understanding lightning physics with LANL's polarized RF mapping and gamma-ray observations
Fan Guo	T-2	Student Fellow	Magnetic Reconnection at the Heliospheric Current Sheet in the Turbulent Solar Wind Close to the Sun
Jeffrey Broll	ISR-1	Chick Keller PD	Positron-Emission Tracing of Magnetotail Evolution (PETME): An Investigation of Magnetotail Energy Storage and Topology
Justin Holmes	T-5	Chick Keller PD	Explaining the Origin of Highly-oblique Whistler Waves in the Inner Magnetosphere
Misa Cowee	ISR-1	Rapid Response IPD	Indirect signatures of HANE artificial belts
Gian Luca Delzanno	T-5	Student Fellow	Kinetic plasma turbulence at low electron beta
Roxanna Bujack	CCS-3	Rapid Response R&D	Automatic Objective Substorm Detection and Visualization

Geophysical (Focus Lead: Youzuo Lin, 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
Zhou Lei	EES-17	Student Fellow	Grain-scale prediction of hypervelocity projectile penetration into terrestrial and extraterrestrial granular materials
Bulbul Ahmmed	EES-16	Rapid Response R&D	Automatic Objective Substorm Detection and Visualization

Planetary (Focus Lead: Ann Ollila, ISR-2)

PI	Group	Program	Title
Ann Ollila, Dan Coupland	ISR-1, ISR-2	Rapid Response IPD	NASA PRISM Proposal Development
Carene Larmat	EES-17	Student Fellow	How hard should Mars be hit so Insight SEIS can unravel its hidden history?
Phillip Stauffer	EES-16	Student Fellow	From Manhattan to Mars: Applying models of subsurface radionuclide gas seepage from nuclear testing to understand methane release from the Martian subsurface
Kai Gao	EES-17	Rapid Response R&D	A Feasibility Study of Distributed Acoustic Sensing the Moon
Tony Shin	ISR-1	Rapid Response R&D	Fully Autonomous Optimal Motion Planning for Detecting Water using Exploratory Rovers
Maria Pinilla	ISR-1	Chick Keller PD	Development of Autonomous System to Detect Water and Raw Materials
Katherine Mesick	ISR-1	Large University	LANL/ASU Student Fellow Partnership in Planetary Nuclear Spectroscopy

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

PI	Group	Program	Title
Andrew Bartlow	B-10	Rapid Response IPD	Ecology and Evolution of Infectious Disease proposal development
Jolante Wieke Van Wijk	EES-16	Rapid Response IPD	Biogeophysics Initiative
Amanda Evans	B-11	Student Fellow	Continuous Flow ISRU Biocatalytic Generation of Green Propellants for Space Travel
Armand Dichosa	B-10	Student Fellow	Discovering Gut Bacteria Responsible for Degrading Dietary Lignocellulose
Ramesh Jha	B-11	Student Fellow	Engineering of Artificial Enzymes with Transformative Chemical Functionality

Marie Kroeger	B-11	Chick Keller PD	Unlocking Microbiome Engineering Potential for Food Security Mentor(s): J. Dunbar, B-11; S. Sevanto, EES-14
Sangeeta Negi	B-11	Rapid Response R&D	Shaping the Phytomicrobiome: Harnessing Plant – Endophyte symbiosis for Climate-Smart Agriculture

Special Rapid Response – R&D Projects

PI	Group	Program	Title
Nathan Conroy	EES-14	Special Rapid Response R&D	Isotopes in Plant Leaves as Indicators of Wetland Biogeochemical Conditions

Special Rapid Response – Arctic Research R&D Projects

PI	Group	Program	Title
Armand Dichosa	B-10	Special Rapid Response R&D	Preventing the Next Pandemic: Biosurveillance of Paleopathogen Release Due to Climate Change
Milena Veneziani	T-3	Special Rapid Response R&D	Preparing for Arctic Ocean Acoustics Under Climate Change
Kurt Solander	EES-16	Special Rapid Response R&D	Characterization of Arctic sea ice melt pond dynamics with remote sensing
Kumkum Ganguly	B-10	Special Rapid Response R&D	Life in Europa? Extremophiles might have an answer!
Katrina Bennett	EES-16	Special Rapid Response R&D	Storylines of change: the impact of concurrent extreme hydroclimate events on snow and permafrost in the Arctic