Time Domain Astrophysics

Goal: to accelerate understanding of stellar and galactic dynamics on time scales accessible with ground-based telescopes and space-based surveys – such as Gaia, TESS, and ZTF -- that are likely to be disruptive for astronomy, astrophysics, and data science.

Team Awards 2019

A Galactic Census of Eclipsing Binaries
Timothy Brandt, University of California, Santa Barbara
James Davenport, University of Washington
Funded by the Heising-Simons Foundation.

Beyond Gaia: Expanding the Dynamical Map of the Milky Way with Asteroseismic Distances
Sukanya Chakrabarti, Rochester Institute of Technology
Daniel Huber, University of Hawaii
Robyn Sanderson, University of Pennsylvania
Funded by Research Corporation.

Dancing Degenerates: Ages of Brown Dwarfs from White Dwarfs
Jackie Faherty, American Museum of Natural History
Andrew Mann, University of North Carolina at Chapel Hill
Siyi Xu, Gemini Observatory
Funded by the Heising-Simons Foundation.

Discovering Quiescent Supermassive Black Holes in NGC Galaxies with TESS
Claude-Andre Faucher-Giguere, Northwestern University
Simon Scaringi, Texas Tech University
Yue Shen, University of Illinois at Urbana-Champaign
Funded by Research Corporation.

Aging Gracefully: Stellar Ages across the HR Diagram and their Implications for Galactic Archaeology
Keith Hawkins, University of Texas at Austin
Jennifer van Saders, University of Hawaii
Andrew Wetzel, University of California, Davis
Funded by the Heising-Simons Foundation.

Inferring Stellar Population Ages from Integrated Light Curves
Joshua Pepper, Lehigh University
Gail Zasowski, University of Utah
Funded by the Heising-Simons Foundation.

Team Awards 2018

Mapping Explosive Enrichment
Carles Badenes, University of Pittsburgh
Gail Zasowski, University of Utah
Funded by the Heising-Simons Foundation.

Acceleration Today: Finding, Weighing, and Characterizing New Degenerate Companions to Nearby Stars
Timothy Brandt, University of California, Santa Barbara
Jackie Faherty, American Museum of Natural History
Funded by the Heising-Simons Foundation.

Quickening Heartbeats: Measuring Tidal Orbital Decay in Eccentric Young Binaries
James Fuller, California Institute of Technology
Kaitlin Kratter, University of Arizona
Nicholas Law, University of North Carolina at Chapel Hill
Funded by the Heising-Simons Foundation.

A Gaia-Enabled View of Chemical Homogeneity
Keith Hawkins, University of Texas at Austin
Kaitlin Kratter, University of Arizona
Gail Zasowski, University of Utah
Funded by Research Corporation.

Expanding the Time-Domain Revolution: Stellar Parameters from Every Light Curve
Daniel Huber, University of Hawaii
Melissa Ness, Columbia University
Funded by Research Corporation.

Data at Your Fingertips: A Real-Time Discovery Engine for Gaia
Sergey Koposov, Carnegie Mellon University
Joshua Peek, Space Telescope Science Institute
Funded by the Heising-Simons Foundation.

Discovery of Sub-kpc Binary SMBHs from Gaia with Variability-Induced Astrometric Jitter
Yue Shen, University of Illinois at Urbana-Champaign
Nadia Zakamska, Johns Hopkins University
Funded by the Heising-Simons Foundation.

Team Awards 2016

Stellar Multiplicity Meets Stellar Evolution: The APOGEE View
Carles Badenes, University of Pittsburgh
Kevin Covey, Western Washington University
Todd Thompson, Ohio State University
Funded by Research Corporation.

Precovery of Super-Flaring G Dwarfs for TESS using PTF and ZTF
Eric Bellm, University of Washington
John Wisniewski, University of Oklahoma
Funded by Research Corporation.

The Stellar MRI
Matteo Cantiello, the Flatiron Institute
Jeffrey Oishi, Bates College
Funded by Research Corporation.

Down but Not Out: The White Dwarf Survivors of Low-Luminosity Thermonuclear Supernovae
Ryan Foley, University of California, Santa Cruz
James Fuller, California Institute of Technology
Funded by the Heising-Simons Foundation.

Identifying the Origin of the Extreme Scattering Events
Dimitrios Giannios, Purdue University
David Kaplan, University of Wisconsin at Milwaukee
Funded by Research Corporation.

Supernova Light Curves Influenced by Hidden CSM Interaction
Daniel Kasen, University of California, Berkeley
Anthony Piro, Carnegie Observatories
Nathan Smith, University of Arizona
Funded by Research Corporation.

The Shocking Reality of Dusty Cataclysms
Mansi Kasliwal, California Institute of Technology
Jennifer Sokoloski, Columbia University
Funded by the Heising-Simons Foundation.

Team Awards 2015

Catching the Emergence of a SN Years after the GRB
Laura Chomiuk, Michigan State University
Dimitrios Giannios, Purdue University
Funded by Research Corporation.

Nuclear Burps and Belches: Presupernova Eruptions in 3D
Sean Couch, Michigan State University
Nathan Smith, University of Arizona
Funded by Research Corporation.

Monitoring Extrasolar Space Weather with the LWA and Evryscope
Gregg Hallinan, California Institute of Technology
Nicholas Law, University of North Carolina at Chapel Hill
Funded by Research Corporation.

Transformational Technologies and Techniques for High Precision Photometric and Spectroscopic Stellar TDA
Leslie Hebb, Hobart and William Smith Colleges
Suvrath Mahadevan, Pennsylvania State University
John Wisniewski, University of Oklahoma
Funded by Research Corporation.

Professional-Amateur Collaboration: Enhancing the Scientific and Societal Value of Evryscope
Nicholas Law, University of North Carolina at Chapel Hill
Jennifer Sokoloski, Columbia University
Funded by Research Corporation.

Bringing Novae into the Twenty-First Century
Raffaella Margutti, New York University (now at Northwestern University)
Brian Metzger, Columbia University
Ken Shen, University of California, Berkeley
Funded by Research Corporation