Astro 2020

Decadal Survey on Astronomy and Astrophysics

NASA APAC Update

29 October 2019

The National Academies of SCIENCES ENGINEERING MEDICINE

nas.edu/astro2020

Astro2020 Steering Committee Membership

Fiona A. Harrison, Co-Chair
California Institute of Technology

Robert C. Kennicutt, Jr., Co-Chair
University of Arizona and Texas A&M

Julianne Dalcanton
University of Washington

Pieter van Dokkum
Yale University

Andrew S. Driesman
Johns Hopkins University Applied Physics Laboratory

Jonathan J. Fortney
University of California, Santa Cruz

Gabriela González
Louisiana State University

Jordan A. Goodman
University of Maryland

Marc P. Kamionkowski
Johns Hopkins University

Bruce A. Macintosh
Stanford University

Jacobus M. Oschmann
International Society for Optics and Photonics (SPIE)

Rachel A. Osten
Space Telescope Science Institute

Lyman A. Page, Jr.
Princeton University

Eliot Quataert
University of California, Berkeley

Wanda A. Sigur
Lockheed Martin, Retired

Rachel Somerville
Flatiron Institute/Rutgers University

Keivan G. Stassun
Vanderbilt University

Jean L. Turner
University of California, Los Angeles

Tim de Zeeuw
Leiden University

Ellen G. Zweibel
University of Wisconsin, Madison

Highlights from 1st Steering Committee Meeting (July 15-17)

- All three agencies, NASA, NSF and DOE asked for an ambitious program (i.e., above current funding levels) the agencies also need a strong visionary case to justify the ambitious program
  - The Air Force Office of Science has joined as a co-sponsor since the first meeting
- Agencies reiterated importance of providing decision rules
- Agencies clarified questions about statement of task and nature of advice needed on program components

White Papers

- White papers are the primary method for community input and drive what the survey considers
- Science whitepapers 590 submissions
  - Submitted in March 2019, all read and discussed by science panels
- Activity and Project, and State of the Profession Consideration (APC) whitepapers
  - 300+ papers submitted July 10
  - ~250 APC white papers are relevant for program panels
  - ~70 papers address State of the Profession
- All papers can be viewed at:
  - www.nas.edu/astro2020 → look under community input

Astro2020 Panel Overview

- Panel on Cosmology (Daniel Eisenstein, Harvard)
- Panel on Galaxies (Daniela Calzetti, U Mass)
- Panel on the Interstellar Medium and Star and Planet Formation (Lee Hartmann, Michigan)
- Panel on Stars, the Sun, and Stellar Populations (Sarbani Basu, Yale)
- Panel on Compact Objects and Energetic Phenomena (Deepto Chakrabarty, MIT)
- Panel on Exoplanets, Astrobiology, and the Solar System (Victoria Meadows, U Washington)
- Program Panel on Electromagnetic Observations from Space 1 (Marcia Rieke, U Arizona)
- Program Panel on Electromagnetic Observations from Space 2 (Steve Kahn, Stanford)
- Program Panel on Optical and Infrared Observations from the Ground (Timothy Heckman, Johns Hopkins)
- Program Panel on Radio, Millimeter, and Submillimeter Observations from the Ground (Andrew Baker, Rutgers)
- Program Panel on Particle Astrophysics and Gravitation (John Beacom, Ohio State U, and Laura Cadonati, Georgia Tech)
- Program Panel on An Enabling Foundation for Research (David Spergel, Flatiron Institute)
- Panel on State of the Profession and Societal Impacts (Margaret Hanson, U Cincinnati, and Enrico Ramirez-Ruiz, UC Santa Cruz)

New for Astro2020

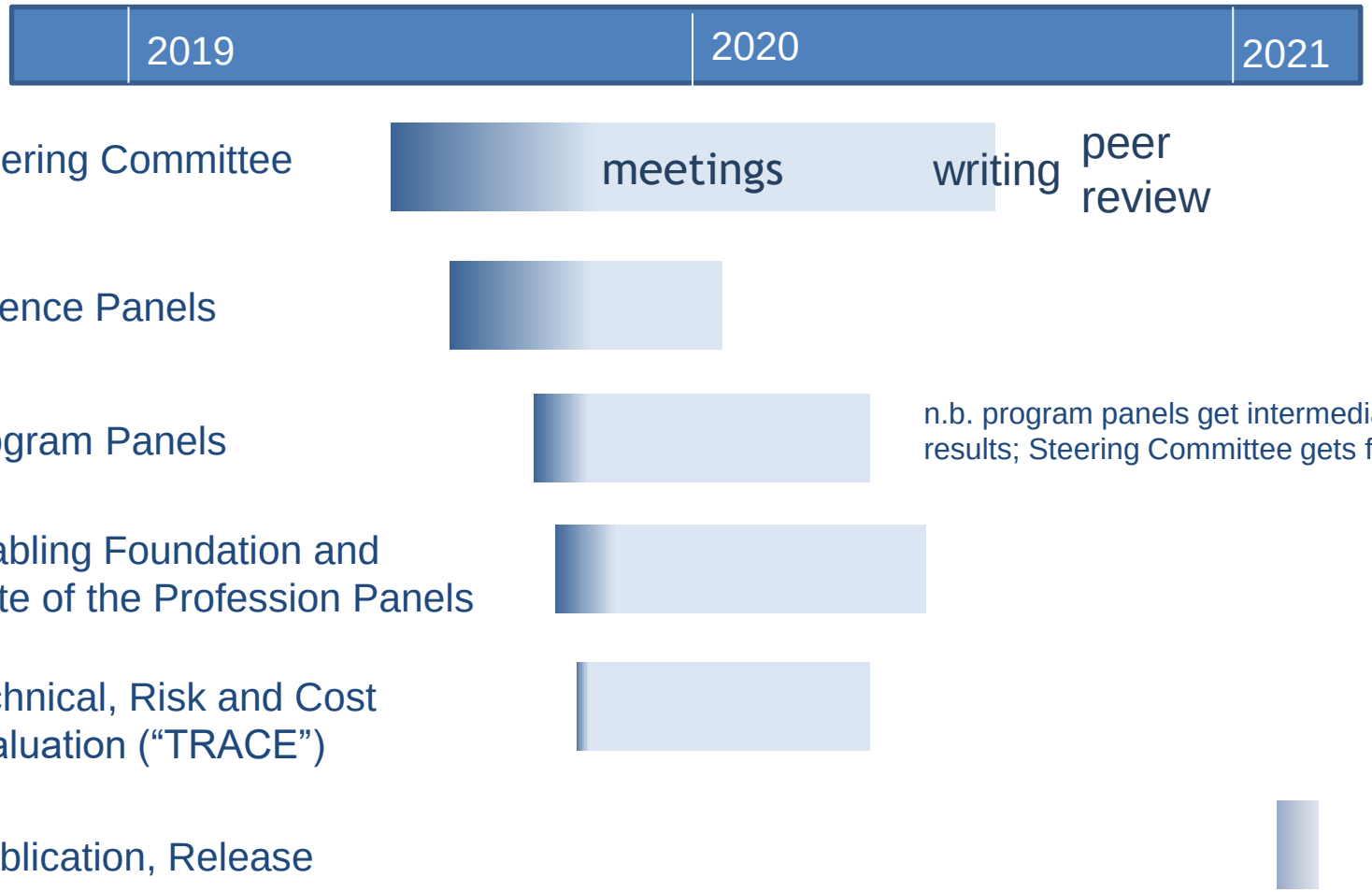
- An Enabling Foundation for Research

laboratory astrophysics; theory, computation, simulation; data collection, archiving, and analysis; facilities, funding, and programs; general technology development

- State of the Profession and Societal Impacts

gather information on the health and demographics of the astronomy and astrophysics community and make actionable recommendations to the Astro 2020 committee on the topics of demographics, diversity and inclusion, workplace climate, workforce development, education, public outreach

Notional Decadal Survey Timeline



Science Panels

- Key goals
  - Provide scientific priorities that will be used to assess proposed missions, facilities, and projects, and develop an overall research strategy
  - Provide a strong scientific case to justify an ambitious strategic plan
- Process and status
  - Two face-to-face meetings, plus telecons as needed
    - 1st meetings completed: white paper reviews, discussions, planning
    - 2nd meetings (nearly completed), formulation of key science questions and discovery areas (below)
- Deliverables
  - Identify key science questions and discovery areas (similar to Astro2010)
  - Panel reports, but shorter than 2010

Program Panels

- Key goals, activities, and deliverables
  - Assess proposed projects and activities against science priorities and technical readiness, risk, cost, and forward priority activities for ranking by the steering committee
  - Comment on questions of programmatic balance within its area
- Process and status
  - Three face-to-face meetings, plus telecons as needed
    - October 2019 – March 2020
    - Will receive briefings from science panels in December 2019
  - Reports from NASA flagships are available from the project teams, NASA will pass on its independent assessments when completed
  - Panels will also present in-person briefings to steering committee and prepare written reports (shorter than 2010)

Technical, Risk, & Cost Evaluation (TRACE; formerly known as CATE)

- Independent evaluation of project/activity concepts for technical risk, maturity and cost/schedule
- TRACE process will provide an analysis of technology development needs and an independent cost assessment
- Analysis (and the survey) recognizes most concepts evaluated are early stage (pre-Phase A)
- Process is accommodating the varying levels of definition and maturity of implementation plans