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DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
BOARD ON PHYSICS AND ASTRONOMY
SPACE STUDIES BOARD

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COMMITTEE ON ASTRONOMY AND ASTROPHYSICS

May 5, 2022

Public Draft Teleconference #10 Agenda for the Roman Space Telescope Effort

THURSDAY, MAY 5, 2022

Pacific/Eastern Time Zones

Remote access connections found on last page of the agenda.

OPEN SESSION

- | | | |
|-------------------------|---|-----------------------------|
| 9:30 AM/12:30 PM | Welcome and Introductions
<i>(5 mins.)</i> | Shaul Hanany
CAA Member |
| 9:35 AM/12:35 PM | Roman Observations with the Coronagraph
<i>(30 mins.)</i> <ul style="list-style-type: none">- Presentation- Q&A Discussion | Vanessa Bailey,
NASA JPL |

CLOSED SESSION

- | | |
|-------------------------|---------------------------------|
| 10:05 AM/1:05 PM | COMMITTEE AND STAFF ONLY |
| 11:00 AM/2:00 PM | <i>Meeting Adjourns</i> |

The statement of task for this report is as follows:

The 2020 Decadal Survey in Astronomy and Astrophysics, Pathways to Discovery in Astronomy and Astrophysics for the 2020s (hereafter Pathways), concluded that the scientific landscape and the Roman Space Telescope's capabilities have changed significantly since it was first envisioned by New Worlds, New Horizons (hereafter NWNH), and the currently planned balance of surveys and guest investigator-led observations may not be optimally suited to take advantage of new scientific opportunities. The Pathways report recommended (§7.7.1) that the NASA Astrophysics Division should hold a non-advocate review of the Roman Space Telescope's science program to set the appropriate mix of survey time devoted to the 3 Core Community Surveys (which address the weak lensing, baryon acoustic oscillations, supernovae, and microlensing programs in NWNH) relative to guest investigator-led observing programs during the primary five-year mission.

The NASA Astrophysics Division would like advice from the CAA on the philosophy for setting the mix of survey times and that this is responsive to the Pathways recommendation of a non-advocate review. The charge to the CAA has two parts.

Part 1:

Background. Roman's current observing plan constraint is that the three Core Community Surveys + 3 months of CGI tech demo observations take up no more than 75% of the available observing time. The remaining =25% is for General Astrophysics Surveys as proposed by the community. The baseline plan is to conduct an open community process in the 2022-2023 timeframe to maximize the overall scientific return from the Core Community Surveys, while also providing the observations needed to meet the cosmology and exoplanet demographics science requirements derived from Astro2010 and reiterated by Astro2020.

Question. Should this community process (1) continue as is and maximize the utility of the Core Community Surveys for general astrophysics science while strictly maintain the constraint of =25% of available observing time for General Astrophysics Surveys; (2) focus the Core Community Surveys solely on cosmology and exoplanet requirements, and optimize for shortest possible surveys, thereby maximizing the time available for General Astrophysics Surveys; or (3) relax the =25% constraint to enable greater optimizations of the Core Community Surveys for general astrophysics science?

Part 2:

Background. Within the General Astrophysics Surveys, the Baseline plan allows for 30 selected proposals over the Roman prime mission lifetime across three proposal cycles. Experience with both the Hubble Space Telescope and the Chandra X-ray Observatory has demonstrated that peer reviews do not do a good job of comparing small programs to large programs. For both Hubble and Chandra, time is explicitly set aside for, and competed, to enable large programs.

Question. How should the Roman project the balance between the fractions of time allocated to large/medium/small General Astrophysics Surveys (i.e. allocate more time to large coherent observations, or allocate more time to a multitude of smaller independent ones)? How should the Roman project set the overall number of General Astrophysics Surveys (note that increasing the number of General Astrophysics Surveys, even holding total time constant, will come at increased cost to the mission)?

The Roman Project requires the advice of the non-advocate CAA as soon as possible in order to make the anticipated changes in the Roman observing plan. NASA plans to solicit wide field instrument science and infrastructure teams imminently (solicitation released in January 2022, proposals due in April 2022, selections in September 2022); these teams will work on a broad range of science preparation activities and to develop infrastructure needed to pursue ambitious science goals made possible with Roman surveys. The NASA Astrophysics Division requests that the CAA undertake the necessary research for providing this advice prior to the March 2022 meeting, discuss the question during the March 2022 meeting, and deliver a report to NASA before July 15, 2022.

REMOTE CONNECTION DETAILS

To view the joint open session meeting, please use the link provided below.

<https://livestream.com/accounts/7036396/events/10378580>

GENERAL NOTES

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