

Strategic Exoplanet Initiatives with HST and JWST

Context

Exoplanet science was highlighted as a key science area for the 2020s in the Astro2020 Decadal Survey. HST and JWST provide unique technical capabilities that enable precision investigations of planet formation, structure and evolution. HST has a two decade heritage of probing the chemical composition of exoplanet atmospheres through transit spectroscopy; JWST has only recently started observations, and it is already clear that its sensitivity at near- and mid-infrared wavelengths opens up new opportunities for transit spectroscopy of low-mass exoplanets and high-resolution coronagraphic imaging and spectra of resolved giant planets. These investigations will lay the foundations for the future flagship missions highlighted by the 2020 Decadal Survey, particularly the Habitable Worlds Observatory.

Charter

The Space Telescope Science Institute's Interim Director, Nancy Levenson, has decided to constitute a Working Group to provide advice and recommendations on how HST and JWST observations can best be leveraged to investigate exoplanet systems.

The Exoplanet Strategy WG is charged with providing guidance on optimal strategies for maximizing the scientific return from HST and JWST spectroscopic and imaging observations of planetary systems. In particular, the Working Group should address the following tasks:

- Solicit input from the community on key science areas that should be prioritized for HST or JWST observations;
- Identify science themes that should be prioritized for future HST and JWST General Observer programs and/or Archival analyses, including potential HST multi-cycle programs;
- Provide advice on the optimal timing for substantive follow-up observations and suggest mechanisms for enabling those observations;
- Comment on the appropriate scale of resources likely required to support those programs;
- Develop a specific concept for a large-scale (~500 hours) Director's Discretionary exoplanet program to start implementation by JWST Cycle 3.

By forming this Working Group, STScI aims to ensure that many voices are heard in the formulation of the appropriate priorities for exoplanet science with HST and JWST. Our goal is to maximize the science return and legacy value of the observations and the resultant data products. An open request for input by the astronomical community will be issued by STScI to support the Working Group's efforts. In defining the science case for a DD program, the Working Group should take into account both the archival research value of the planned observations, the coordination of these observations with other observatories, and benefits from other community contributions including theoretical and numerical investigations.

The Working Group will comprise 8-10 members of the astronomical community selected by the STScI in consultation with the HST and JWST user committees. The Chair of the Working Group will organize the meetings of the Working Group, and STScI will provide logistical (travel, meeting, telecon, etc) support as needed. We expect that the Working Group will have at least one face-to-face meeting, supplemented by regular telecons and email exchanges.

The Working Group chair is Seth Redfield (Wesleyan) and the members are:

Natasha Batalha, Ames; Bjorn Benneke, Montreal; Beth Biller, ROE; Nestor Espinoza, STScI; Kevin France, Colorado; Quinn Konpacky, UCSD; Laura Kreidberg, MPIA; Emily Rauscher, Michigan; and David Sing, JHU

The Working Group will summarize their conclusions in a report to the Director and presentations to the STUC and the JSTUC. Interim recommendations will be presented in the Fall of 2023, with the final report due by January 2024.

The primary STScI contacts for the Advisory Committee will be Neill Reid (Associate Director for Science) and Elena Sabbi (Deputy Head, SMO) They are ex officio members of the Working Group.

Call for Community Input - 26 June, 2023

The Working Group on Strategic Exoplanet Initiatives with HST and JWST is soliciting community input on how HST and JWST observations can best be leveraged to investigate exoplanet systems. More information about our working group can be found in our [charter](#).

Community input was provided by completing this short, [on-line survey](#) and/or in the form of [short white paper](#) contributions submitted to STScI by **Friday, September 8, 2023**. Information on the activities of the working group, including links to the survey and white paper submission, can be found [here](#). The latter site includes a list of FAQs. Three Town Hall meetings were held on July 12, 19 and 31 to advertise community engagement opportunities; the last meeting was reserved for early career researchers. Further details can be found on [the Working Group website](#).

The slide deck for the Town Halls is linked [here](#).

The white paper submissions are all linked [here](#) (or see the sidebar to this page).

Final Report

The Working Group's [Final Report](#) was submitted to the Director on April 1, 2024.