ULTRAVIOLET ASTRONOMY IN THE XXI CENTURY

e-Workshop 2020 – October 27-29

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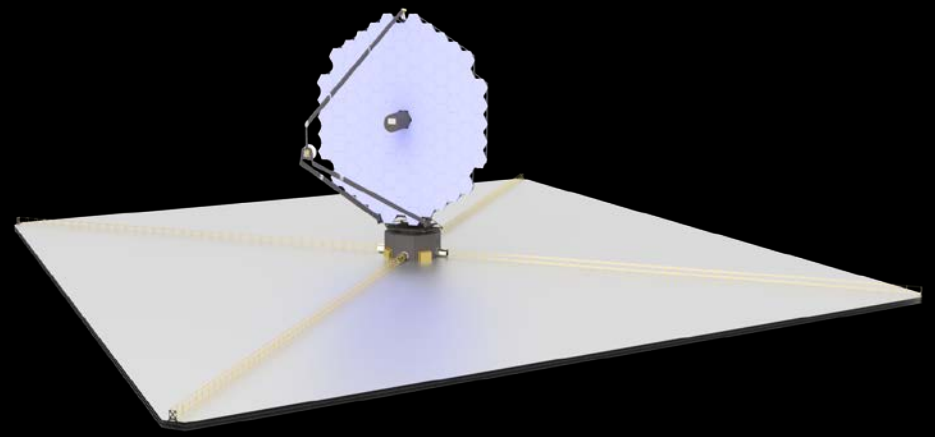
Planning for a future large UVOIR telescope



Martin Barstow

Member LUVOIR STDT

Chair, Space Telescope Institute Council

Chair, UKSA Science Programme Advisory Committee

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The UVOIR Astronomy Problem

- Access to UV has been continuous since IUE (1978)
- HST has enormous capability across UVOIR…
  - STIS, COS, WFC3, ACS
- …but inevitably limited life
  - Now 30 years old
  - 5 more years?
- No new UVOIR-capable large observatory planned
  - Small imaging missions
  - Need high sensitivity, spatial & spectral resolution, broad spectral coverage

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Developments in Russia & Europe

- Development of World Space Observatory
- UV section of OPTICON network - 2003
- Network for UV Astronomy – 2008
- Coordinated response to ESA L mission call
  - European UV Observatory (EUVO) submitted

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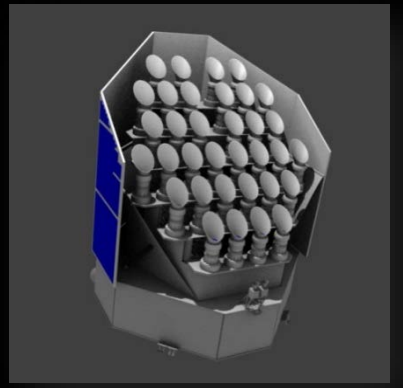
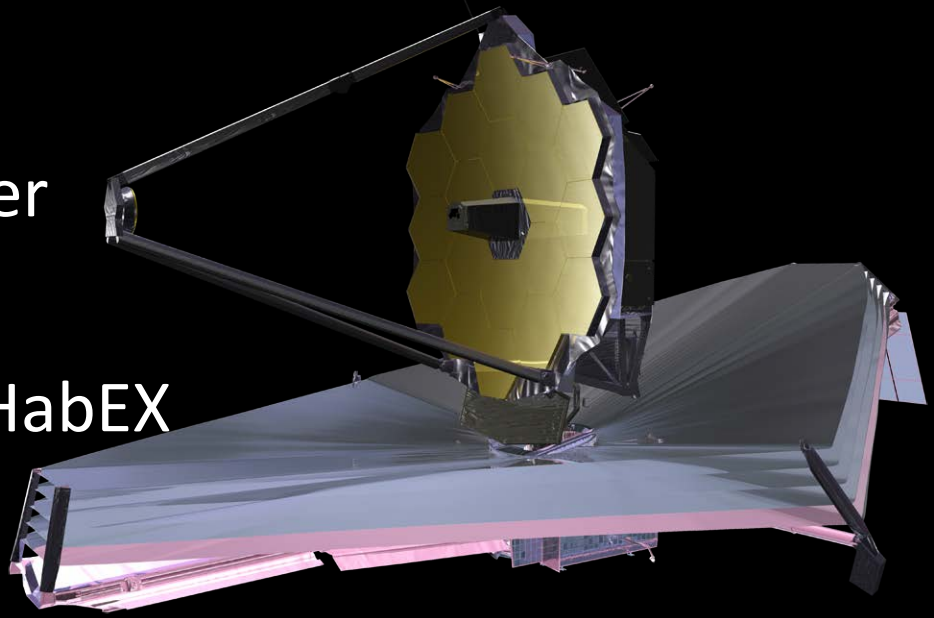
The ExoPlanet Context



- Several exciting exoplanet missions
  - PLATO (ESA), TESS (NASA), Cheops (ESA), Ariel (ESA), Twinkle (UK?) + JWST (NASA/ESA)
  - May generate “Earth-like” candidates, but limited follow-up
- Lead up to US Decadal 2020
  - Life in the Universe – key requirement driver
  - AURA HDST study
  - NASA flagship mission studies - LUVOIR & HabEX



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Europe in LUVOIR

- Observers on STDT team
  - Martin Barstow (UK), Lars Buchhave (Denmark), Mark Ferrari (France), Ana Gomez de Castro (Spain), Thomas Henning (Germany), Antonella Nota (ESA)
- CNES sponsored instrument study
  - POLLUX, UV spectro-polarimeter (98-390nm, R~120,000-200,000)
  - Study leads Coralie Neiner & Jean-Claude Bouret
- White paper submission to Vision 2050
  - “The Search for Living Worlds and the Connection to Our Cosmic Origins”

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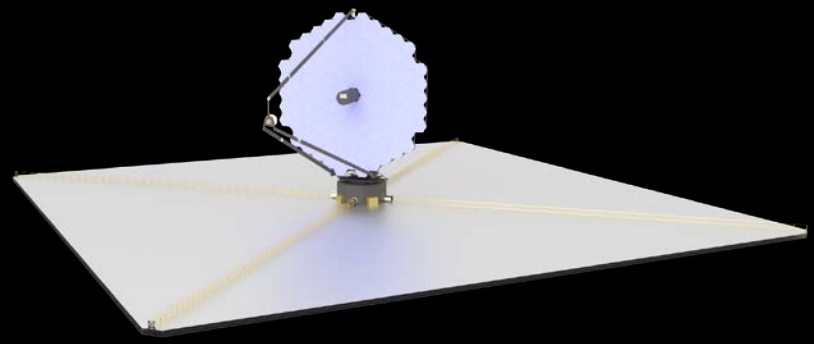
What Next?



- LUVOIR can address the “Are we alone?” question
  - One of the most exiting challenges for science!
- Timescale is long
  - Concept is maturing
  - Launch not before 2035
- Decadal will report next year (?)
  - Essential LUVOIR selected
- Vision 2050 will report end of 2020
  - A ESA-led mission unlikely
  - Along the lines of ESA contributions to HST & JWST
  - Continue to be pro-active in developing interest within ESA