



UV/Visible RFI: *the Path Forward*

Dominic Benford

Chief Scientist, Cosmic Origins Program Office

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Definition of a Future Ultraviolet-Optical Space Capability

Following the fourth servicing mission, the Hubble Space Telescope (HST) is now more capable than ever before and is enabling spectacular science, including observation at ultraviolet wavelengths. No more servicing missions are planned, and NASA intends to deorbit HST robotically at the end of the decade. The committee endorses this decision. Meanwhile, the results from FUSE, GALEX, and the HST's Cosmic Origins Spectrograph now show that as much could be learned about the universe at ultraviolet wavelengths as motivated the proposal and development of JWST for observations at infrared wavelengths. Topics that are central to the survey's committee's proposed science program include understanding the history of the intergalactic medium and its cycling in and out of galaxies as well as the evolution of normal stars and galaxies.

Key advances could be made with a telescope with a 4-meter-diameter aperture with large field of view and fitted with high-efficiency UV and optical cameras/ spectrographs operating at shorter wavelengths than HST. This is a compelling vision that requires further technology development. The committee highly recommends a modest program of technology development to begin mission trade-off studies, in particular those contrasting coronagraph and star-shade approaches, and to invest in essential technologies such as detectors, coatings, and optics, to prepare for a mission to be considered by the 2020 decadal survey. A notional budget of \$40 million for the decade is recommended.

From "New Worlds, New Horizons in Astronomy and Astrophysics"

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- Further activities concerning technologies, instruments, and mission concepts to be released in the new year.
- Technology priorities realign as needed to support results of RFI findings.
- Funded concept study/studies presumed in the pipeline for 2013 initiation.
- UV/Vis moderate mission concept ~2015 and/or large mission concept for ~2019.

- Much of science presented requires:
 - Sensitivity, and lots of it (e.g., $>10\times$ HST)
 - Angular resolution (\approx or better than HST)

Doesn't sound feasible for $\leq 2m$ -class, so may not be Probe-esque.

- Some of science presented requires:
 - 900-1200Å coverage
 - Multi-object spectroscopy

*To improve in $N \times A_{\text{eff}}$ over existing by 100x
could be done... Probe-esque?*

- If something like a Probe is warranted, the path forward might look like this:
mission concept → selection → new start
(although special circumstances needed to realize)
- COR would invite assistance from COPAG & community in this effort.

Think Big?



- Things that truly *require* $\geq 4\text{m}$ -class telescopes do not appear to be able to fit easily within presently perceived programmatic constraints, ∴ Flagship.
- If these science cases are the most compelling, then the chore for the coming years (leading to 2020 Decadal) might be:
mission concept → tech dev. plan → \$