Galaxy Evolution with the Habitable Worlds Observatory

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Over the past three decades, the Hubble Space Telescope has fundamentally reshaped our understanding of the formation and evolution of galaxies. As we approach the final chapters of its remarkable journey, we face the prospect of a future without a high-resolution view of galaxies in the rest-frame ultraviolet across cosmic time. This underscores the need for a successor capable of continuing its legacy. In response to this imperative, the community is embarking on a journey to develop a Super Hubble, the Habitable Worlds Observatory (HWO). Building upon the HabEx and LUVOIR NASA mission studies, its advanced capabilities include a 6+ meter aperture, coronagraph, imager, and multi-object spectrograph, and promise to usher in a new era of discovery.

While the HWO's flagship project will be the search for biosignatures on nearby exoplanets, its scope extends far beyond. Here, we will present the current state of HWO development and potential to revolutionize our understanding of galaxy evolution by shedding light on the drivers of galaxy growth, the composition of stellar populations, and the intricate processes governing multi-scale galaxy assembly. We will summarize the current activities of the NASA Great Observatory Maturation Program Working Groups and discuss how the French community can provide input to ESA on HWO participation, and play strong role in the development of its science requirements and design.