

# Probing the Genesis of Supermassive Black Holes: Emerging Perspectives from JWST and Expectation toward New Wide-Field Survey Observations

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## UNCOVERing the first black hole seeds with JWST & Chandra

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JWST is now detecting early black holes (BHs) as they transition from seeds to supermassive BHs. I will present our recent results harnessing the power of the JWST UNCOVER survey combined with Chandra X-ray observations to identify UHZ-1, the first X-ray luminous massive BH at  $z=10.1$ . Placing UHZ-1 into context with other  $z=8-10$  luminous active galactic nuclei, we are purportedly now witnessing the growth of the very first BHs. This large population of massive, and often heavily obscured BHs were rapidly growing at only  $t < 0.5$  Gyrs, and were residing in galaxies with masses similar to that of the BH – two to three orders of magnitude higher than local BH-to-stellar mass ratios and consistent with a picture wherein such BHs originated from heavy seeds.

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