

AGN demography with JWST broad-band imaging to the rescue.

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³ CAST stands for *Chasing dusty-AGN up to redShift Two* and is a team comprised by ~ 40 members who contributed to the current status of the project.

Abstract

With a 5 to 10 year life-span and being a 6 m-class telescope in space, the *James Webb Space Telescope* (*JWST*) will be a highly competitive relatively short-lived tool toward knowledge revolution, with considerable operation overheads. As a result, it is both of interest to the community and facility to conduct observations as efficiently as possible. This abstract highlights a colour criterion proposed by Messias et al. 2014 to select active galactic nuclei (AGN) from the local Universe as far back as the end of the epoch of reionization ($0 < z < 6$). Depending on the targetted Universe cosmic time, one is able to conduct a demographic study of dusty AGN with only up to four broad-band filters required (F200W, F440W, F770W, F1800W), three of which can be observed at the same time. This allows MIRI surveys wider than the ones by JADES and CEERS teams. The fine spatial resolution enabled by *JWST* will allow one to deblend host and AGN light, hence selecting less-luminous AGN, a phase where AGN pass most of their life-cycle. Such observations will also allow for the community to assess stellar assembly in galaxies or to identify very high-redshift sources.