



# 12329 - Physical Properties of Spectroscopically Confirmed Galaxies at $5.7 < z < 7$ in the Subaru Deep Field

Cycle: 18, Proposal Category: GO  
(Availability Mode: SUPPORTED)

## INVESTIGATORS

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## VISITS

0 Total Orbits Used

## ABSTRACT

The last few years have seen a number of discoveries that provided the first glimpse of the universe at  $z > 6$  using both space and groundbased telescopes. The Subaru Deep Field (SDF) project has been very successful in searching for highredshift galaxies. It has spectroscopically identified more than 100 galaxies at  $z > 5.7$  (i.e., the majority of the currently confirmed galaxies at  $z > 5.7$  are in this field), and thus is an ideal field to study physical properties of distant galaxies. Here we propose to carry out deep IRAC imaging of SDF with 12 telescope pointings. When combined with the existing data from our previous program, the new data will cover 90% of the known SDF galaxies at  $z > 5.7$  to a depth of 56 hours or 0.12  $\mu$ Jy (3 sigma). As joint Spitzer/HST observations, we also propose to obtain deep HST WFC3 F125W and F160Wband images of a representative sample of galaxies. The WFC3 data provides restframe UV photometry to decipher the properties of young stellar populations, while the IRAC data measure the amplitude of the Balmer break and constrain the properties of mature populations. With the proposed observations we will be able to characterize the physical properties of these highestredshift galaxies known so far, and obtain accurate information of stellar masses, ages, star formation histories, etc. This helps us to understand the earliest galaxy formation and evolution and the galaxy contribution to cosmic reionization. We will also

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specifically address the following questions: (1) Do Lyman alpha emitters and Lyman break galaxies represent physically two different galaxy populations at  $z > 6$ ; (2) Is the Lyman alpha emission systematically suppressed at  $z > 6$  with respect to the continuum emission, or, are we reaching the epoch of cosmic reionization; (3) Do we see any sign of abnormally young stellar population at  $z > 6$ . The data obtained through this program will have a legacy value for highredshift studies in general.