

K15a Properties of An Early-Phase Type Ia Supernova Found by The MUSSES Project

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Type Ia supernovae (SNe Ia) have been used as “standard candles” to demonstrate the accelerating expansion of the universe though the nature of their progenitor systems and how the stars explode are still obscured. Photometric information of SNe Ia within a few days after their explosions (early-phase SNe Ia) is important for solving such long-standing issues of SNe Ia, and the systematical study of early-phase SNe Ia has been carried out with the new generation large field camera of the 8.2-m Subaru telescope—Hyper Suprime-Cam (HSC). In this presentation, we report an abnormal early-phase SN Ia found in the first observing run of “the **M**ulti-band **S**ubaru **S**urvey for **E**arly-phase **S**Ne Ia” (**MUSSES**) in 2016. We will present the details on observational results and theoretical interpretations, and discuss the scientific importance of this interesting object. As the first early-phase SN Ia survey with 8-m class telescopes, more exciting findings for the further understanding of the SNe Ia explosion and progenitor issues can be expected in the Subaru/HSC era.