

Status of the Multi-band Cameras for Transiting Exoplanets MuSCAT1,2 and New Results in 2018

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MuSCAT and MuSCAT2 are optical multi-band cameras developed for observing transiting exoplanets. MuSCAT was developed for the Okayama 188cm telescope of NAOJ in 2014, and MuSCAT2 was developed for the TCS 1.52m telescope in Teide observatory, the Canary Islands, Spain, in 2017. MuSCAT and MuSCAT2 have the capabilities of simultaneously obtaining 3- (g-, r-, and z_s-) and 4- (g-, r-, i-, and z_s-) band images, respectively. One of the main purposes of these instruments is to validate and characterize the planetary candidates discovered by the all-sky transiting planet survey satellite TESS, which was launched in April 2018.

In 2018, there was no much observation with MuSCAT because that it was the transition period of the telescope operation from NAOJ to the user community, and that there were several troubles in the instrument. However, from January 2019 we have observed with MuSCAT for about 1 week per month in average.

As for MuSCAT2, we have observed more than 250 nights in corroboration with the co-researchers in Instituto de Astrofísica de Canarias (IAC) in 2018. We have improved the operation system and remote-observing system to reduce the load of the observers and to make it possible to observe from Japan smoothly.

TESS has observed only the Southern sky in the first year, and there were few TESS planetary candidates that can be observed with MuSCAT and MuSCAT2 in 2018. Instead, in this year we have observed planetary candidates discovered by the Kepler's ecliptic survey or ground-based transit surveys, as well as low-density transiting planets to observe their atmospheres.

In this contribution, we will report the status of the operations of MuSCAT and MuSCAT2 in 2018, and show new results obtained from these instruments.

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