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POS-7 NuSTAR Search For Black Holes Within the Galactic Center

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This investigation reports on the 2016 Nuclear Spectroscopic Telescope Array (NuSTAR) observation of the Galactic Center (GC). Two new transients were identified within the Galactic Center, Swift J174540.7-290015 (Transient 15) and Swift J174540.2-290037 (Transient 37). Having observed the GC for 10 years and detected no prior outburst, it can be concluded that the time between outburst (recurrence time) is longer than 10 years. The recurrence time of a neutron star is less than 10 years, while that of a black hole is assumed to be approximately 100 years. Therefore, it can be concluded that these transients are very likely black hole binaries. Through both spectral fitting and timing analysis, Transients 15 and 37 were identified as black hole candidates. The observed number of transients were used to estimate the existence of 30 black hole binaries within the Galactic Center, 27 still unobserved, indicating the likelihood of a substantive population of black holes within the Galactic Center.

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