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Searching for Intermediate Mass Black Holes in the Milky Way's galactic halo

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Intermediate Mass Black Holes (IMBHs) are a class of black holes with masses in the range 10^2 - 10^5 solar masses, which can not directly derive from stellar evolution. Looking for these objects and estimating their abundance is important for understanding the nature and distribution of the Dark Matter in the galactic halo. Since February 2018 to January 2020 the LMC and SMC have been intensively monitored by the DECam instrument, installed on the 4m V. Blanco Telescope (CTIO, Chile) with the main objective to find microlensing events possibly due to IMBHs.

Here we outline the data analysis pipeline and test it versus known variable sources. We then find a number of not previously known variable sources with a few of them showing a light curve similar to that expected for a microlensing event. Further analysis is required.

For these sources, and in particular for the uncatalogued variable stars, we try to determine if they are periodic or not via a periodogram analysis.

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