

Abstract Submitted
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Searching for M Dwarf Flares in Raptor-Q All-sky Photometric Data TRISTAN WOLFE, New Mexico Tech, P.R. WOZNIAK, TOM VESTRAND, Los Alamos National Laboratory, RAPTOR Science, M. J. CREECH-EAKMAN COLLABORATION¹ — Stellar flares are releases of magnetic energy that cause emissions of a wide range across the electromagnetic spectrum. Flares of M dwarf stars are characterized by a large increase in blue and near-UV emissions, causing an increase in several magnitudes within minutes (Hilton et al, AJ, 2010). Exoplanets of several Earth masses have been discovered orbiting M dwarfs, so the search for M dwarf flares is very important, as the planets' atmospheres and habitability may be affected by these bursts in energy. Using data from Los Alamos National Labs' Raptor-Q telescope at Fenton Hill, NM, we are developing an automated method of detecting M dwarf flares. Raptor-Q operates robotically and, with five cameras, collects over 10,000 images of 90% of the sky above 12 degrees elevation in a given night, with a sensitivity up to magnitude R=10 (Wren et al, Proc SPIE, 2010), and automatically provides photometric and astrometric reductions of its images. A prototype pipeline has been developed using Python that looks for transient light curves (quick changes in magnitude over time) in Raptor-Q's data. These light curves will then be analyzed for characteristics of stellar flares, and cross-correlated with published catalogs to determine stellar type and any previous observations of flares.

¹New Mexico Tech

Tristan Wolfe
New Mexico Tech

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