

Abstract Submitted
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Stacking Analysis of Binary Systems with HAWC¹ CHAD BRISBOIS, Michigan Technological Univ, HAWC COLLABORATION — Detecting binary systems at TeV energies is an important problem because only a handful of such systems are currently known. The nature of such systems is typically thought to be composed of a compact object and a massive star. The TeV emission from these systems does not obviously correspond to emission in GeV or X-ray, where many binary systems have previously been found. This study focuses on a stacking method to detect TeV emission from LS 5039, a known TeV binary, to test its efficacy in HAWC data. Stacking is a widely employed method for increasing signal to noise ratio in optical astronomy, but has never been attempted previously with HAWC. HAWC is an ideal instrument to search for TeV binaries, because of its wide field of view and high uptime. Applying this method to the entire sky may allow HAWC to detect binary sources of very short or very long periods not sensitive to current analyses.

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