

Abstract Submitted
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Search for Axion Stars Using the Global Network of Optical Magnetometers for Exotic Physics (GNOME)¹ PERRIN SEGURA, Oberlin College, TATUM WILSON, California State University - East Bay, HEATHER PEARSON, Oberlin College, MADELINE MONROY², California State University - East Bay, IBRAHIM SULAI, Bucknell University, DEREK JACKSON KIMBALL, California State University - East Bay, JASON STALNAKER, Oberlin College, GNOME COLLABORATION — The Global Network of Optical Magnetometers for Exotic physics (GNOME) searches for evidence of exotic spin coupling between elementary particle spins and topological defects in a field of ultra-light axion-like particles (a possible candidate for dark matter). One of the network’s search targets is a proposed dark matter structure known as an axion star or Q-ball. We present an analysis method designed to search for evidence of such structures. The analysis includes an initial stage based on the excess power technique that identifies transient oscillatory signals coincident across multiple detectors. This is followed by a consistency check in which the relative signal amplitudes in each station and the sensitive axis of each detector are used to establish the most likely magnitude and direction of the event.

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