

Abstract Submitted
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Impacts by Compact Ultra Dense Objects¹ JEREMEY BIRRELL,
LANCE LABUN, JOHANN RAFELSKI, The University of Arizona — We propose to search for nuclear density or greater compact ultra dense objects (CUDOs), which could constitute a significant fraction of the dark matter [1]. Considering their high density, the gravitational tidal forces are significant and atomic-density matter cannot stop an impacting CUDO, which punctures the surface of the target body, pulverizing, heating and entraining material near its trajectory through the target [2]. Because impact features endure over geologic timescales, the Earth, Moon, Mars, Mercury and large asteroids are well-suited to act as time-integrating CUDO detectors. There are several potential candidates for CUDO structure such as strangelet fragments or more generally dark matter if mechanisms exist for it to form compact objects.

[1] B. J. Carr, K. Kohri, Y. Sendouda, & J. Yokoyama, Phys. Rev. D81, 104019 (2010).

[2] L. Labun, J. Birrell, J. Rafelski, Solar System Signatures of Impacts by Compact Ultra Dense Objects, arXiv:1104.4572.

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Lance Labun
The University of Arizona

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