## Abstract Submitted for the APR20 Meeting of The American Physical Society

Gravitational searches for compact dark matter objects CHARLES HOROWITZ, Indiana Univ - Bloomington, RUDOLF WIDMER-SCHNIDREG, Institute of Geodesy, Stuttgart University, Stuttgart, Germany — Dark matter could be composed of compact dark objects (CDOs). These objects may interact very weakly with normal matter and could move freely *inside* astronomical bodies. We calculate the expected gravitational wave (GW) signal for a CDO merging with a galactic neutron star. We search data from the first advanced LIGO observing run for GWs from close CDO binaries orbiting inside the Sun. A CDO moving in the inner core of the Earth will have an orbital period near 55 min and produce a time dependent signal in a gravimeter. Data from superconducting gravimeters rule out such objects moving inside the Earth unless their mass  $m_D$  and or orbital radius a are very small so that  $m_D a < 1.2 \times 10^{-13} M_E R_E$ . Here  $M_E$  and  $R_E$  are the mass and radius of the Earth [1912.00940, Phys. Rev. Let. in press].

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Charles Horowitz Indiana Univ - Bloomington

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