

Abstract Submitted  
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**Charge- $2e$  Skyrmion condensate in a hidden order state**<sup>1</sup> CHEN-HSUAN HSU, SUDIP CHAKRAVARTY, University of California, Los Angeles — A higher angular momentum ( $l = 2$ )  $d$ -density wave, a mixed triplet and a singlet, interestingly, admits skyrmionic textures. The Skyrmions carry charge  $2e$  and can condense into a spin-singlet  $s$ -wave superconducting state. In addition, a charge current can be induced by a time-dependent inhomogeneous spin texture, leading to quantized charge pumping. The quantum phase transition between this mixed triplet  $d$ -density wave and skyrmionic superconducting condensate likely leads to deconfined quantum critical points. We suggest connections of this exotic state to electronic materials that are strongly correlated, such as the heavy fermion URu<sub>2</sub>Si<sub>2</sub>. At the very least, we provide a concrete example in which topological order and broken symmetry are intertwined, which can give rise to non-BCS superconductivity.

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Chen-Hsuan Hsu  
University of California, Los Angeles

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