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**A Phase Transition in U(1) Configuration Space:
Vortex Annihilation and Oscillons** JOEL THORARINSON,
MARCELO GLEISER, Dartmouth College — We show numerically that
the low-momentum scattering of a vortex-antivortex pair leads to an os-
cillon for low scalar to vector mass ratios in the 2d Abelian Higgs model.
The spherically symmetric oscillon lives 2 – 4 orders of magnitude longer
than the fundamental time scales and has an associated dipole gauge
field strength and charge density. The annihilation also leaves a char-
acteristic topological signature in the Chern-Simons density n_{cs} , and
Higgs winding density n_w . The emergence of oscillons as remnants of
the vortex-antivortex annihilation can be mapped onto a phase tran-
sition with control parameter given by $\beta = \frac{m_{scalar}^2}{m_{vector}^2}$ and critical value
 $\beta_c = 0.073$.

Prefer Oral Session
 Prefer Poster Session

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