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Title:	A Proposed Fluxtronic Capacitor
Authors:	Singh, Vivek (/jspui/browse?type=author&value=Singh%2C+Vivek)
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Abstract:	The Byers and Yang theorem predicts that multiply connected system like a superconductor that encloses flux is known to show flux periodicity in the partition function. As a result the free energy and all thermodynamic properties exhibited by the system show flux periodicity in-terms of the elementary flux quanta (0 = h/e), where e = 2e in superconductors. The most common physical quantity measured in this context is the thermodynamic magnetization. One can assume other thermodynamic properties also exhibit the same flux periodicity. A capacitor that is charged and discharged adiabatically is also a thermodynamic system. We propose a capacitor with holes on a superconducting electrode would exhibit a flux dependent capacitance. We present some basic nano fabrication recipes to fabricate capacitor with micron and sub-micron holes. Other than simply demonstrating another interesting thermodynamic quantity one can also foresee the role of charge flux duality playing a role in these measurements. We discuss a sample fabrication process and a bridge measurement setup to implement this scheme.
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