

Abstract Submitted
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Deconfinement of Vortices with Continuously Variable Fractions of the Unit Flux Quanta in Two-Gap Superconductors¹ JUN GORYO, Aoyama Gakuin University, SINGO SOMA, HIROSHI MATSUKAWA, Aoyama Gakuin University — We propose a new stage of confinement-deconfinement transition, which can be observed in laboratory. In two-gap superconductors, two kinds of vortex exist by the presence of two different $U(1)$ phases. Each of them carries a continuously variable fraction of the unit flux quanta $\Phi_0 = hc/2e$. The confined state of these two is a usual vortex and stable in the low temperature region of the system under a certain magnetic field above H_{c1} . We see an analogy to quarks in a charged pion. An entropy gain causes two fractional vortices to be deconfined above a certain temperature. We estimate the condition of the deconfinement by using parameters for a typical two-gap superconductor MgB_2 .

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