Solid State Communications
Volume 37, Issue 5, February 1981, Pages 425-428

Change of the effective fluctuation dimensionality in vanadium thin films in a magnetic field

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https://doi.org/10.1016/0038-1098(81)91220-5

Abstract

Lowering of the effective fluctuation dimensionality in the critical region has been found for thin superconducting vanadium films placed in strong perpensicular magnetic fields. The effect shows itself as a change of the critical index characterizing the temperature dependence of the excess film conductivity. By varying the magnetic field, one can observe both two-dimensional and zero-dimensional critical fluctuations on the same specimens.