

**Pan, Xing-Bin**

**Surface superconductivity in applied magnetic fields above  $H_{C_2}$ .** (English) [Zbl 1004.82020](#)  
*Commun. Math. Phys.* 228, No. 2, 327-370 (2002).

Summary: In this paper we study the surface superconductivity phenomenon of type 2 superconductors under applied magnetic fields above the critical field  $H_{C_2}$ . We show that, for a cylindrical superconductor of infinite height placed in a homogeneous applied magnetic field,  $H\mathbf{e}_3$ , with  $H$  lying in between and keeping away from  $H_{C_2}$  and  $H_{C_3}$ , superconductivity persists uniformly at a thin sheath surrounding the entire lateral surface of the sample. As the applied field decreases gradually, superconductivity in the surface sheath becomes strong and develops into a surface superconducting state, while the interior of the sample remains close to the normal state.

**MSC:**

[82D55](#) Statistical mechanics of superconductors  
[47N55](#) Applications of operator theory in statistical physics (MSC2000)

Cited in **4** Reviews  
Cited in **30** Documents

**Keywords:**

surface superconductivity phenomenon; cylindrical superconductor

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