

Measurement of the vortex-core radius by scanning tunneling microscopy

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Using a scanning tunneling microscope operated in a spectroscopic mode we imaged flux-line lattices in niobium diselenide at various external magnetic fields. From the evaluation of a large number of tunneling-current profiles taken across the individual vortices we deduced the dependence of the vortex-core radius on the applied magnetic field. It was found that the core radius shows a pronounced decrease with increasing field, even for H/H_{c2} . This behavior is qualitatively well characterized by self-consistent solutions of the Usadel equations.