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Title:High critical current density and scaling of phase-slip processes in YBaCuO nanowires
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Abstract:YBaCuO nanowires were reproducibly fabricated down to widths of 50 nm. A Au/Ti cap layer on YBCO yielded high electrical performance up to temperatures above 80 K in single nanowires. Critical current density of tens of MA cm⁻² at T = 4.2 K and of 10 MA cm⁻² at 77 K were achieved that survive in high magnetic fields. Phase-slip processes were tuned by choosing the size of the nanochannels and the intensity of the applied external magnetic field. Data indicate that YBCO nanowires are a rather attractive system for the fabrication of efficient sensors, supporting the notion of futuristic THz devices.
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