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**Singular length dependence of critical
current in superconductor/normal-metal/superconductor bridges**

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— We examine the dependence of the critical Josephson current on the length L of the normal bridge N between two bulk superconductors. This dependence turns out to be nonanalytic at small L . The nonanalyticity originates from the contribution of extended quasiparticle states with energies well above the superconducting gap. This should be contrasted with the more familiar contribution to the Josephson current coming from Andreev bound states localized in the normal region at energies below the gap. We also have preliminary results on the ac Josephson effect above the critical temperature T_c where we have studied the influence of the superconducting fluctuations on the current noise. It turns out that the current noise acquires singular in $T - T_c$ correction, which is peaked at the Josephson frequency. This correction originates from the fluctuating ac Josephson current.

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