

Abstract Submitted
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Direct observation of gate-controlled Josephson inductance in multiwalled carbon nanotube ANTTI PAILA, LORENZ LECHNER, Low Temperature Laboratory, Helsinki University of Technology, MARKUS GAASS, CHRISTOPH STRUNK, Institute for Experimental and Applied Physics, University of Regensburg, MIKA SILLANPÄÄ, PERTTI HAKONEN, Low Temperature Laboratory, Helsinki University of Technology — Electrometers based on Cooper pair tunneling are, in principle, dissipationless, and thus advantageous due to their small back action noise. We have studied the so called L-SET circuit, in which the frequency of Josephson plasma oscillations in a superconducting junction device is tuned below one GHz by a parallel LC circuit. In the present work, we have used a Josephson junction made out of a multiwalled carbon nanotube with Pd/Nb contacts. We observe gate-tunable critical currents up to $I_c \sim 10$ nA, which are deduced from shifts in the LC-circuit resonance frequency caused by the Josephson inductance ($\propto I_c^{-1}$) of the MWNT junction. This work was financially supported by Academy of Finland and by European Union (CARDEQ, FP6-IST-021285-2).

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