Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Interaction corrections to tunneling conductance in ballistic superconductors[1] ALEX LEVCHENKO, Argonne National Laboratory — It is known that in the two-dimensional disordered superconductors electron-electron interactions in the Cooper channel lead to the negative logarithmical in temperature correction to the tunneling conductance, $\delta g_{DOS} \propto -\ln(\frac{T_c}{T-T_c})$, above the critical temperature T_c. Physically this result appears due to the density of states suppression by superconductive fluctuations near the Fermi level. It is interesting that the other correction, which accounts for the Maki-Thompson type interaction of fluctuations, is positive and exhibits strong power-law, $\delta g_{MT} \propto (\frac{T_c}{T-T_c})^3$, which dominates the logarithmic term in the immediate vicinity of the critical temperature. This presentation is devoted to the fate of such interaction corrections in the ballistic superconductors. It turns out that ballistic dynamic fluctuations perturb single particle density of states near the Fermi level at the energy scale $\epsilon \sim \sqrt{T_c(T-T_c)}$, which is different from $\epsilon \sim T - T_c$, relevant in the diffusive case. In this regime we confirm that correction to the tunneling conductance remains negative and logarithmic not too close to the critical temperature, while in the immediate vicinity of the transition we find novel power-law for the Maki-Thompson contribution, $\delta g_{MT} \propto (\frac{T_c}{T-T_c})^{3/2}$.

[1]Work supported by the U.S. DOE Contract No. DE-AC02-06CH11357.

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Date submitted: 02 Dec 2009 Electronic form version 1.4