The factor $(2d)^{-1}$ was introduced to define the current density. We assume that the phases of tunneling amplitudes of the superconducting ($i=1$) and normal ($i=2$) layers are uncorrelated. The operators $b_{q\sigma}$ correspond to the normal metal. The operators for the superconductor are the same, as used previously, but rewritten in the Nambu representation: namely the A_{pi} mean annihilation of quasiparticles in layers $i=1$ (S) and $i=2$ (N) with momentum p and spin 1/2; the $A_{pi'}$ mean creation of quasiparticles with momentum $-p$ and spin -1/2. The temperature is taken to be zero, the index zero means the ground state, summation is taken over the final states m.

After that we pass over to the band representation with the energy levels $E_1=\varepsilon_1$, $E_2=\varepsilon_2$, $E_3=-\varepsilon_2$, $E_4=-\varepsilon_1$. We will assume the tunneling probability to the N-layers to be much smaller than to the S-layers

$$\overline{|T^{(2)}|^2} \ll \beta\,\overline{|T^{(1)}|^2} \quad , \beta = m_1/m_2 \ll 1 \ , \tag{10}$$

and first consider the case of small hopping $t \ll \Delta\sqrt{\beta}$.

The result for this case is

$$J = 4\pi e(2d)^{-1}\frac{\rho_n}{2}\frac{m_1}{2\pi}\int_0^\infty d\xi\,\frac{2}{\pi}\int_0^1\frac{dq}{(1-q^2)^{1/2}}$$

$$\times\{[\,\overline{|T^{(1)}|^2}\left(\frac{tq}{\Delta}\right)^2+\overline{|T^{(2)}|^2}\,](n_{\varepsilon_2-eV}-n_{\varepsilon_2+eV})$$

$$+\overline{|T^{(1)}|^2}(n_{\varepsilon_1-eV}-n_{\varepsilon_1+eV})\}, \tag{11}$$

where n_ε are the Fermi functions of corresponding arguments, $\xi=v_1(|k|-k_o)$, $q=\cos k_z d$. The contribution from the band (2) is small coming either from small tunneling to the N-layers or from the small hybridization with the S-layers. Nevertheless it is of some importance since in the conductance $G=dJ/dV$ it is the only one at $eV<\Delta$. The shape of the curve $G(V)$ is presented at Fig.4. We have a jump at the threshold $eV=\Delta$ followed by a logarithmic singularity at the maximal gap of the ε_1 band and a subsequent decrease to the normal state value. There is a small contribution of the ε_2 band at $eV<\Delta$ but in experimental conditions it may be obscured by surface defects or other phenomena.