According to this theory the threshold value for $d\sigma_{/}$ should be exactly twice the one for $d\sigma_{\perp}$. The experimental result is not exactly the same : $2\Delta_{//}/T_c = 5.7$, $2\Delta_{\perp}/T_c = 3.4$. There is, however, a simple way to correct this difference. We have assumed that there is no interaction of electrons in the "normal" planes. But this is quite impossible. So let us assume that there is a very small interaction, g_2. Then it is natural to beleive that a condensate is formed, and hence a nonvanishing $\langle a_{(2)k+} a_{(2)-k-}\rangle$ exists. If we assume $\Delta_2 > 0$ the threshold will become $\Delta_{\perp} = \Delta + \Delta_2$, and this could explain why $\Delta_{\perp}$ is not equal to $\Delta_{//}/2$. From the experimental values quoted above we obtain $\Delta/T_c = 2.85$, $\Delta_2/T_c = 0.55$, i.e. Δ is more than five times larger than Δ_2.

2. TUNNELING CONDUCTANCE [6]

Another method of direct measurement of the energy spectrum and particularly of the energy gap is the tunneling conductance $G = dI/dV$ as a function of the voltage V. It is well known that G is proportional to the electronic density of states. Here we meet a paradox. According to the last measurements of Hasegawa [7] the main contribution comes from the superconducting layers, and a clear gap of the order of the one obtained from Raman experiments on $Bi_2Sr_2CaCu_2O_{8+\delta}$ is seen. On the other hand the tunneling conductance reflects the electronic density of states which is proportional to the effective mass in any dimensionality. Since we had to assume for interpretation of the Raman experiments that the effective mass of the normal layers is much larger than the mass of the superconducting layers, the contribution of the normal layers to the density of states would dominate in contradiction with the experiment. There is a way to resolve this paradox assuming the tunneling probabilities to the S- and N-layers to be very different. We leave the detailed discussion of the possible origin to the end of this part.

We consider a contact between some normal metal and the S-N superconductor. According e.g. to ref.[8], § 22.3, we have

$$J = 2\pi e(2d)^{-1} \sum_{i=12;pq} |T^{(i)}_{pq}|^2 \sum_m \delta(E_o - E_m)\{((A^+_{pi} b_{q+})_{om} (A_{pi} b^+_{q+})_{mo}$$
$$+ (A_{pi} b_{q-})_{om} (A^+_{pi} b^+_{q-})_{mo} - (A_{pi} b^+_{q+})_{om} (A^+_{pi} b_{q+})_{mo}$$
$$- (A^+_{pi} b^+_{q-})_{om} (A_{pi} b_{q-})_{mo}\} \qquad (9)$$