assuming the density of states and Δ in the singular region to be much larger than beyond it and integrating over k_y and k_z we obtain

$$1 = \frac{\lambda}{2} \int_{-\mu_1}^{\infty} \frac{d\xi\, \mu_1^{1/2}}{(\xi+\mu_1)^{1/2}} \frac{th[(\xi^2+\Delta_o^2)^{1/2}/2T]}{(\xi^2+\Delta_o^2)^{1/2}} , \tag{49}$$

where Δ_0 is the value of Δ in the singular region, and

$$\lambda = \frac{(2m_x)^{1/2}}{(2\pi)^2 \mu_1^{1/2}} \left(\frac{g\text{æ}^2}{n-1} - \frac{2UP_{0y}}{d} \right) . \tag{50}$$

We will assume the second term in the brackets to be much less than the first one, and neglect it. The solution of eq. (49) at $T=0$ in the limit $\Delta \ll \mu_1$ is

$$\Delta_0 = 8\, \mu_1\, e^{-1/\lambda} . \tag{51}$$

Now let us consider some point at the Fermi-surface, distant from the singularity. For simplicity we consider a circular Fermi surface (there is no dependence on k_z), and φ will be the angular distance from one of the singular "points" (the extension of the singularity, P_{0y}, and the z-size of the Brillouin zone, $2\pi/d$, are assumed to be small compared to the radius of the cylindrical Fermi surface, p_o, which is of the order of K). The integral in the BCS equation consists of two parts: along the singularity and beyond it. Since the density of states in the singular region as well as the value of $\Delta=\Delta_o$ are large, we will assume that this part of the integral dominates (estimate of the other part's contribution see below), and hence $\Delta(\varphi)$ beyond the singularity will be defined by its value in the singular region. The integral over ξ will be the same, as in eq. (49), and we can replace it using this equation. Eventually we obtain the equation

$$\frac{\Delta(\varphi)}{\Delta_o} = \frac{2(n-1)P_{0y}}{\text{æ}^2 d} \left\{ \left(\frac{\text{æ}}{2p_o} \right)^{2n} \left[\sin^{-2n}\left(\frac{\varphi}{2}\right) + \sin^{-2n}\left(\frac{\varphi-\varphi_0}{2}\right) \right] - \frac{U}{g} \right\}, \tag{52}$$

where p_o is the Fermi momentum, and φ_o - the location of the next singularity (in general a sum over locations of all singularities has to be taken). This formula describes the behavior of $\Delta(\varphi)$ far from the singularities, i.e. at not too small values of φ. For description at any angle a simple interpolation