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87(8): The Mathematical Statement of the Problem

This is:

$$\frac{d^2 \phi}{dR^2} + \kappa^2 \phi = \frac{\rho}{\epsilon_0} \cos(2\kappa R) \quad - (1)$$

$$\rho = \frac{4\pi e}{\epsilon_0 V} \left(\frac{\cos^2(\kappa(R + R(\text{vac})))}{a_0^2 \kappa^2} \right) \quad - (2)$$

$$r + r(\text{vac}) = \frac{1}{\kappa^2} \cos(\kappa(R + R(\text{vac}))) \quad - (3)$$

$$d = \langle d \rangle \left(1 + \cos(\kappa_0 r) \right) \quad - (4)$$

$$\kappa_0 \neq \kappa \quad - (5)$$