The above system of equations, combined with the appropriate boundary conditions, are sufficient for a complete determination of the displacements, strains, and stresses occurring in the plastically deformed wafer.

B. Method of Solution. The utility of a displacement function becomes apparent when it is realized that the previous system of equations can be reduced to a single equation, involving only the displacement function ψ, and the characteristics wafer material properties. Once the appropriate displacement function is determined, or assumed, the strains and displacements can be found directly. The first step will be to formulate this equation, and then discuss the available solutions in light of the various material parameters.

From the first flow law, equation (6), the expression

$$\sigma_z = \sigma_r\left(\frac{\epsilon_r + 2\epsilon_\theta}{\epsilon_\theta - \epsilon_r}\right) - \sigma_\theta\left(\frac{2\epsilon_r + \epsilon_\theta}{\epsilon_\theta - \epsilon_r}\right) \quad (13)$$

is obtained. Combining this with the second flow law equation (7), gives

$$\tau_{rz} = \frac{-1}{2}\left(\frac{\gamma_{rz}}{\epsilon_\theta - \epsilon_r}\right)(\sigma_r - \sigma_\theta) \quad (14)$$