$$\frac{I(\alpha)}{I_0} = \begin{cases} \sqrt{1 - \frac{\alpha}{\pi} + \frac{1}{2\pi} \sin 2\alpha} & \phi = 0\\ \sqrt{2\left(1 - \frac{\alpha}{\pi}\right)(2 + \cos 2\alpha) + \frac{3}{\pi} \sin 2\alpha} & \phi = \frac{\pi}{2} \end{cases}$$