Stress distribution in a plate under stress with a hole of radius a

$$\tau_{rr} = \frac{T}{2}\left[\left(1 - \left(\frac{a}{r}\right)^2\right) + \left(1 - 4\left(\frac{a}{r}\right)^2 + 3\left(\frac{a}{r}\right)^4\right)\cos(2\varphi)\right]$$

$$\tau_{\varphi\varphi} = \frac{T}{2}\left[\left(1 + \left(\frac{a}{r}\right)^2\right) - \left(1 + 3\left(\frac{a}{r}\right)^4\right)\cos(2\varphi)\right]$$

$$\tau_{r\varphi} = -\frac{T}{2}\left(1 + 2\left(\frac{a}{r}\right)^2 - 3\left(\frac{a}{r}\right)^4\right)\sin(2\varphi)$$