The elliptically polarized light field is defined as

$$\mathbf{A} \cdot \hat{\mathbf{z}} = -\frac{E_0}{\omega\sqrt{1+\xi^2}} \sin^2\left(\frac{\omega t}{2N}\right) \sin(\omega t) \tag{1}$$

$$\mathbf{A} \cdot \hat{\mathbf{x}} = -\frac{E_0 \xi}{\omega\sqrt{1+\xi^2}} \sin^2\left(\frac{\omega t - \pi/2}{2N}\right) \cos(\omega t) \tag{2}$$