Firstly, we define:

$$F_{\ell\ell' L'}^{s_x} \stackrel{\text{def}}{=} \left[-\ell\left(\ell+1\right)+\ell'\left(\ell'+1\right)+L'\left(L'+1\right)\right]\sqrt{\frac{\left(2\ell+1\right)\left(2\ell'+1\right)\left(2L'+1\right)}{16\pi}}\begin{pmatrix} \ell & \ell' & L' \\ -s_x & s_x & 0 \end{pmatrix} \tag{1}$$

$$\epsilon_{ll'L'} = \frac{1+(-1)^{l+l'+L'}}{2} \tag{2}$$

$$\beta_{ll'L'} = \frac{1-(-1)^{l+l'+L'}}{2i} \tag{3}$$

This is the original formula for the lensed field in Hu's paper.

$$\delta X_l^m \approx \sum_{L'M'}\sum_{l'm'} \phi_{L'}^{M'}(-1)^{m'}\begin{pmatrix} l & l' & L' \\ m & -m' & -M' \end{pmatrix} F_{ll'L'}^{s_x}\left[\epsilon_{ll'L'}X_{l'}^{m'}+\beta_{ll'L'}\overline{X}_{l'}^{m'}\right] \tag{4}$$

$$\begin{aligned} \delta X_l^m &\approx \sum_{L'M'}\sum_{l'm'} \phi_{L'}^{M'}(-1)^{m'}\begin{pmatrix} l & l' & L' \\ m & -m' & -M' \end{pmatrix} F_{ll'L'}^{s_x}\left[\epsilon_{ll'L'}X_{l'}^{m'}+\beta_{ll'L'}\overline{X}_{l'}^{m'}\right] &(5)\\ &= \sum_{L'M'}\sum_{l'm'} \phi_{L'}^{-M'}(-1)^{M'}(-1)^{m-m'-M'}\begin{pmatrix} l & l' & L' \\ m & m' & M' \end{pmatrix} F_{ll'L'}^{s_x}(-1)^{m'}\left[\epsilon_{ll'L'}X_{l'}^{-m'}+\beta_{ll'L'}\overline{X}_{l'}^{-m'}\right] &(6) \end{aligned}$$

We know that

$$m-m'-M'=0,\ (-1)^{m-m'-M'}=1 \tag{7}$$

$$\begin{aligned} (-1)^{M'}\phi_{L'}^{-M'} &= \phi_{L'}^{M'*} &(8)\\ (-1)^{m'}X_{l'}^{-m'} &= X_{l'}^{m'*} &(9)\\ (-1)^{m'}\overline{X}_{l'}^{-m'} &= \overline{X}_{l'}^{m'*} &(10) \end{aligned}$$

Then we got:

$$\delta X_l^m \approx \sum_{L'M'}\sum_{l'm'} \phi_{L'}^{-M'*}\begin{pmatrix} l & l' & L' \\ m & m' & M' \end{pmatrix} F_{ll'L'}^{s_x}\left[\epsilon_{ll'L'}X_{l'}^{m'*}+\beta_{ll'L'}\overline{X}_{l'}^{m'*}\right] \tag{11}$$

Then I'll manipulate the formular to give a form easier to use. ...

$$F_{\ell\ell'\ell'}^{0}\epsilon_{ll'L'} = F_{\ell\ell'\ell'}^{0} \tag{12}$$

$$F_{\ell\ell'\ell'}^{2}\epsilon_{ll'L'} = \frac{F_{\ell_1\ell_2\ell}^{2}+F_{\ell_1\ell_2\ell}^{-2}}{2} \tag{13}$$

$$F^2_{\ell\ell'\ell'}\beta_{ll'L'} = \frac{F^2_{\ell_1\ell_2\ell} - F^{-2}_{\ell_1\ell_2\ell}}{2i} \tag{14}$$

So we get:

$$T^{m\ len}_{\ell} = \sum_{\ell' m' L' M'} \begin{pmatrix} \ell & \ell' & L' \\ m & m' & M' \end{pmatrix} F^0_{\ell\ell' L' \ell'} \phi^{My'*}_{L'} \tag{15}$$

$$E^{m\ len}_{\ell} = \sum_{\ell' m' L' M'} \begin{pmatrix} \ell & \ell' & L' \\ m & m' & L' \end{pmatrix} \left(\frac{F^2_{\ell\ell' L'} + F^{-2}_{\ell\ell' L'}}{2} E^{m'*}_{\ell'} \phi^{M'*}_{L'} - \frac{F^2_{\ell\ell' L'} - F^{-2}_{\ell\ell' L'}}{2i} B^{m'*}_{\ell'} \phi^{M'*}_{L'} \right)$$

(16)

$$B^{m\ len}_{\ell} = \sum_{\ell' m' L' M'} \begin{pmatrix} \ell & \ell' & L' \\ m & m' & M' \end{pmatrix} \left(\frac{F^2_{\ell\ell' L'} + F^{-2}_{\ell\ell' L'}}{2} B^{m'*}_{\ell'} \phi^{M'*}_{L'} + \frac{F^2_{\ell\ell' L'} - F^{-2}_{\ell\ell' L'}}{2i} E^{m'*}_{\ell'} \phi^{M'*}_{L'} \right) \tag{17}$$

if we neglect the unlensed B:

$$B^{m\ len}_{\ell} = \sum_{\ell' m' \ell' m'} \begin{pmatrix} \ell & \ell' & \ell' \\ m & m' & M' \end{pmatrix} \frac{F^2_{\ell\ell' L} - F^{-2}_{\ell\ell' L}}{2i} E^{m'*}_{\ell'} \phi^{M'*}_{\ell'}$$

(18)