$$M = \begin{pmatrix} m_{11} & m_{12} \\ m_{21} & m_{22} \end{pmatrix} = \begin{pmatrix} \sqrt{\frac{\beta_{min}}{\beta_{max}}}\cos\frac{\psi_{cell}}{2} & \sqrt{\beta_{max}\beta_{min}}\sin\frac{\psi_{cell}}{2} \\ \frac{-1}{\sqrt{\beta_{max}\cdot\beta_{min}}}\sin\frac{\psi_{cell}}{2} & \sqrt{\frac{\beta_{max}}{\beta_{min}}}\cos\frac{\psi_{cell}}{2} \end{pmatrix}$$

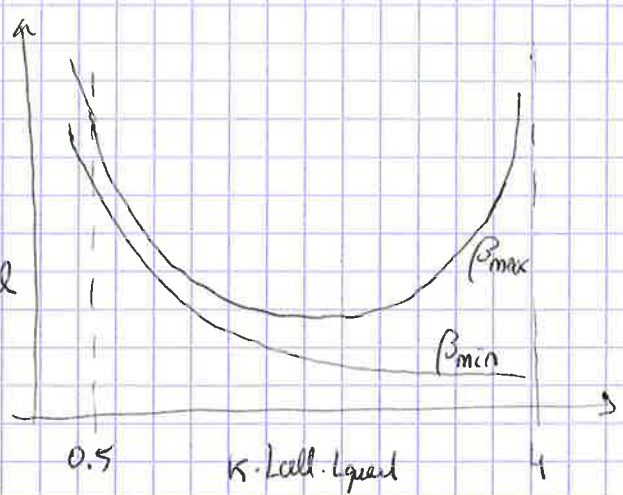
(4) Solving for β_{max} and β_{min} and remembering $\sin\frac{\psi_{cell}}{2} = \frac{l_D}{f} = \frac{L_{cell}}{2f}$ Eq. 3 pag. 4

$$\left.\begin{aligned} \frac{m_{22}}{m_{11}} &= \frac{\beta_{max}}{\beta_{min}} = \frac{1+\frac{l_D}{f}}{1-\frac{l_D}{f}} = \frac{1+\sin(\psi_{cell}/2)}{1-\sin(\psi_{cell}/2)} \\ \frac{m_{12}}{m_{21}} &= \beta_{max}\cdot\beta_{min} = \tilde{f}^2 = \frac{l_D^2}{\sin^2(\psi_{cell}/2)} \end{aligned}\right\} \Rightarrow$$

(5) $$\beta_{max} = \frac{\left(1+\sin\frac{\psi_{cell}}{2}\right)\cdot L_{cell}}{\sin\psi_{cell}} \qquad \beta_{min} = \frac{\left(1-\sin\frac{\psi_{cell}}{2}\right)\cdot L_{cell}}{\sin\psi_{cell}}$$

(6) The plots shown in ~~there~~ entry 35 are:

$\frac{\beta_{max}}{L_{cell}}$ and $\frac{\beta_{min}}{L_{cell}}$



Again they are very useful to chose a phase advance and/or a Beta function and derive which $K \cdot L_{cell} \cdot L_{quad}$ you have to achieve in your design.