$\mathrm{Min} := 0 \qquad \mathrm{Nom} := 1 \qquad \mathrm{Max} := 2$

$V_{IN} := (380 \cdot 0.95 \quad 380 \quad 380 \cdot 1.05) \cdot 1V = (361 \quad 380 \quad 399)\,V$

$V_{OUT} := 5.5V$

$I_{O\_MAX} := 40A$

Ideal turns ratio will require a gain of 0.5 at nominal input voltage

$$N_{Ideal} := \frac{V_{IN_{0,Nom}}}{2 \cdot V_{OUT}} = 34.545$$

It is possible to use a transformer turns ratio that differs from the ideal given above, but keep in mind that this will lead to a sub-optimum result. For this example we will continue to use this turns ratio.

The next step is to compute the LLC gain range required to cover the range of input voltage.

$$x := \frac{N_{Ideal} \cdot V_{OUT}}{V_{IN}} = (0.526 \quad 0.5 \quad 0.476)$$

Now the design process will focus on the maximum power that must be delivered at minimum input voltage. Let us assume we have selected an lm ratio (Lm/Lr) of 5. The ZCS/RR Boundary curve crosses the x=0.53 curve slightly above the Iinavno=0.6 horizontal (See Figure 13 of the Application Note). This occurs at a normalised switching period of Tpn=1.13.

$\mathrm{IinavMaxno} := 1.6$

$\mathrm{TpMaxn} := 1.13$

Using these two parameters obtained from Figure 13 we can now work out the resonant components required to achieve your specfication and switching frequency target.

$f_{SWmin} := 200kHz$

$$Zn := \frac{\mathrm{IinavMaxno} \cdot N_{Ideal} \cdot V_{OUT}}{I_{O\_MAX}} = 7.6\,\Omega$$

$$\omega 0 := 2 \cdot \pi \cdot \mathrm{TpMaxn} \cdot f_{SWmin} = 2.26 \times 10^{5} \cdot \mathrm{Hza}$$

$$Lr := \frac{Zn}{\omega 0} = 5.352 \cdot \mu H$$

$$Cr := \frac{1}{Zn \cdot \omega 0} = 92.661 \cdot nF$$

$$Lm := 5 \cdot Lr = 26.761 \cdot \mu H$$