2-Pole 2-Zero Transfer function For LP. (eq 45 in paper)

$$H(z)=\frac{1+2\cdot z^{-1}+z^{-2}}{1-2\cdot R\cdot x\cdot z^{-1}+R^{2}\cdot z^{-2}}$$

Inverse BLT $\quad z^{-1}=\left(\frac{2-s}{2+s}\right)$

Substituing in H(z)

$$H(z)=\frac{1+2\cdot\left(\frac{2-s}{2+s}\right)+\left(\frac{2-s}{2+s}\right)^{2}}{1-2\cdot R\cdot x\cdot\left(\frac{2-s}{2+s}\right)+R^{2}\cdot\left(\frac{2-s}{2+s}\right)^{2}}$$

Simplifying it

$$H(s)=\frac{16}{4-8\cdot R\cdot x+4\cdot R^{2}+\left(4-4\cdot R^{2}\right)\cdot s+\left(1+2\cdot R\cdot x+R^{2}\right)\cdot s^{2}}$$

Forcing s^2 coeficient to 1 for easy solving later.

$$H(s)=\frac{\frac{16}{\left(1+2\cdot R\cdot x+R^{2}\right)}}{\frac{4-8\cdot R\cdot x+4\cdot R^{2}}{\left(1+2\cdot R\cdot x+R^{2}\right)}+\frac{\left(4-4\cdot R^{2}\right)}{\left(1+2\cdot R\cdot x+R^{2}\right)}\cdot s+s^{2}}$$

The SVF topology has the following transfer function (eq 12 in paper):

$$G(s)=\frac{\left(w_{c}\right)^{2}}{s^{2}+2\cdot k\cdot w_{c}\cdot s+w_{c}}$$

k here is R in the topology but I named it differently
to distinguish it from the radius R in H(z)

So to equalize H(s) and G(s). Coeficients has to be equal

$$w_{c}=\frac{4-8\cdot R\cdot x+4\cdot R^{2}}{\left(1+2\cdot R\cdot x+R^{2}\right)}\qquad 2\cdot k\cdot w_{c}=\frac{\left(4-4\cdot R^{2}\right)}{\left(1+2\cdot R\cdot x+R^{2}\right)}\qquad \left(w_{c}\right)^{2}=\frac{16}{\left(1+2\cdot R\cdot x+R^{2}\right)}$$

Feeding the above into a CAS results in no solution. Basically there are more equations than unknowns.

We can surely get Wc and k, but then the 3rd equation won't be satisfied.

I know we should account for the pre-warp. But that still won't solve the above as far as I can see.