■ Scherer “orthographic” formulae

Let $R = 1$ and any rescaling be done in a final optional step. We then have:

$$y = \sin(\phi)$$

The formula for the circle going through the poles and the point $\{0, \sin(\lambda)\}$ on the equator has with $s = \sin(\lambda)$ the general form:

$$\left(x - \frac{s^2 - 1}{2\,s}\right)^2 + y^2 = \left(\frac{s^2 + 1}{2\,s}\right)^2 \text{ for } \left|s\right| > 0$$

We can express now x as a function of $s = \sin(\lambda)$ and $y = \sin(\phi)$

$$x = \frac{1}{2\,s}\left(s^2 - 1 \pm \sqrt{s^4 + s^2\left(2 - 4\,y^2\right) + 1}\right)$$

The solution for x must have the same sign as λ.

For $s = \sin(\lambda) = 0$, one takes $\{x, y\} = \{0, \sin(\phi)\}$.