$$gxx = -1 - \frac{x^2}{r^2}\cdot\left(\frac{2\cdot m}{r - 2m}\right)$$

$$gtt = 1 - \frac{2\cdot m}{r}$$

$$c(r) = \sqrt{\frac{-gtt}{gxx}}$$

$$c(r) := \sqrt{\frac{1 - \frac{2\cdot m}{r}}{1 + \frac{x^2}{r^2}\cdot\left(\frac{2\cdot m}{r - 2m}\right)}}$$

$$x^2 + y^2 = r^2 \qquad mzon := 1.98\cdot 10^{30} \qquad G := 6.67\cdot 10^{-11} \qquad c := 3\cdot 10^{8}$$

$$r = \sqrt{x^2 + y^2} \qquad m := \frac{G}{c^2}\cdot mzon \qquad m = 1.467 \times 10^{3}$$

$$c(x,y) := \sqrt{\frac{1 - \frac{2\cdot m}{\sqrt{x^2 + y^2}}}{1 + \frac{x^2}{x^2 + y^2}\cdot\left(\frac{2\cdot m}{\sqrt{x^2 + y^2} - 2m}\right)}} \qquad c\left(0, 690\cdot 10^{1}\right) = 0.7580677191$$

$$dcdy(x,y) := \frac{\left[\frac{4\cdot m\cdot x^2\cdot y}{\left(\sqrt{x^2 + y^2} - 2\cdot m\right)\cdot\left(x^2 + y^2\right)^2} + \frac{2\cdot m\cdot x^2\cdot y}{\left(\sqrt{x^2 + y^2} - 2\cdot m\right)^2\cdot\left(x^2 + y^2\right)^{\frac{3}{2}}}\right]\cdot\left(\frac{2\cdot m}{\sqrt{x^2 + y^2}} - 1\right)}{\left[\frac{2\cdot m\cdot x^2}{\left(\sqrt{x^2 + y^2} - 2\cdot m\right)\cdot\left(x^2 + y^2\right)} + 1\right]^2} - \frac{2\cdot m\cdot y}{\left[\frac{2\cdot m\cdot x^2}{\left(\sqrt{x^2 + y^2} - 2\cdot m\right)\cdot\left(x^2 + y^2\right)} + 1\right]\cdot\left(x^2 + y^2\right)^{\frac{3}{2}}}}{2\cdot\sqrt{-\frac{\frac{2\cdot m}{\sqrt{x^2 + y^2}} - 1}{\frac{2\cdot m\cdot x^2}{\left(\sqrt{x^2 + y^2} - 2\cdot m\right)\cdot\left(x^2 + y^2\right)} + 1}}}$$

$$dcdy\left(10, 10^{4}\right) = -1.74577 \times 10^{-5}$$

$$\text{hoek1}(\text{horleng}, y) := \int_{\frac{-\text{horleng}}{2}}^{\frac{\text{horleng}}{2}} \text{dcdy}(x, y)\, dx$$

$$a := \text{hoek1}\left(680 \cdot 10^{8}, 680 \cdot 10^{6}\right)$$

$$a = -8.663 \times 10^{-6}$$

$$\text{arcsec}(a) := a \cdot 206265$$

$$\text{arcsec}(a) = -1.786969218866$$

$$\text{hoek}(\text{horleng}, y) := \left| \begin{array}{l} \text{deltax} \leftarrow 1000000 \\ \text{som} \leftarrow 0 \\ \text{boogseconden\_rad} \leftarrow 206265 \\ x \leftarrow \frac{-\text{horleng}}{2} \\ \text{while } x < \frac{\text{horleng}}{2} \\ \quad \left| \begin{array}{l} \text{bijdrage} \leftarrow \text{dcdy}(x, y) \cdot \text{deltax} \cdot \text{boogseconden\_rad} \\ \text{som} \leftarrow \text{som} + \text{bijdrage} \\ x \leftarrow x + \text{deltax} \end{array} \right. \\ \text{som} \end{array} \right.$$

$$b := \text{hoek}\left(680 \cdot 10^{7}, 680 \cdot 10^{6}\right)$$

$$b = -1.712283$$

$$\text{afbuigingperkm}(x, y) := -\text{dcdy}(x, y) \cdot 1000 \cdot 206265$$

$$x := -10 \cdot \text{rzon}, -10 \cdot \text{rzon} + 100000 .. 10 \cdot \text{rzon} \qquad \text{rzon} := 680 \cdot 10^{6}$$