vecy

$$a := asin(vecy)$$

$$beta := a + \frac{\pi}{2}$$

$$r(h) := Adens0 - \frac{h}{Ha}$$

approximation

$$\frac{d}{dh} r(h) \to -\frac{1}{Ha}$$

$$h(L) := \frac{L \cdot Ha}{Lmax}$$

$$\frac{d}{dL} h(L) \to \frac{Ha}{Lmax}$$

$$Lproj := \sqrt{Lmax^2 - Ha^2}$$

$$hr(pr) := \frac{pr \cdot Ha}{Lproj}$$

$$RO(H) := zeroDensity \cdot \left(1.1^{-H}\right)$$

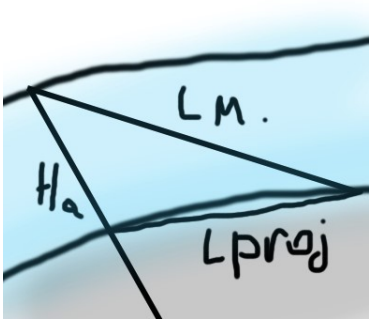
1H = 1000m

$$ROsimple(H) := zeroDensity - \frac{H}{Hmax \cdot 2}$$

$$ROlinear(H) := zeroDensity - \frac{H}{Hmax}$$

$$H\_Accurate(L) := \sqrt{Rp \cdot Rp + L \cdot L - 2 \cdot Rp \cdot L \cdot \cos(beta)} - Rp$$

$$H\_Relative(L) := \frac{L \cdot Ha}{Lmax}$$



height depending on L projection.

$$\int_0^{Lproj} r\left(hr\left(pr\right)\right)\,\mathrm{d}pr \rightarrow \frac{\left(2 \cdot Adens0 - 1\right) \cdot \left(Lmax - Ha\right) \cdot \left(Lmax + Ha\right)}{2 \cdot \sqrt{\left(Lmax - Ha\right) \cdot \left(Lmax + Ha\right)}}$$

$$\int_0^{Lmax} r\left(h\left(L\right)\right) \cdot \left(\frac{\mathrm{d}}{\mathrm{d}L} h\left(L\right)\right)\,\mathrm{d}L \rightarrow Adens0 \cdot Ha - \frac{Ha}{2}$$

$$\int_0^{Lmax} h\left(L\right) \cdot \left(\frac{\mathrm{d}}{\mathrm{d}L} h\left(L\right)\right)\,\mathrm{d}L \rightarrow \frac{Ha^2}{2}$$

$$\int h\left(L\right) \cdot \left(\frac{\mathrm{d}}{\mathrm{d}L} h\left(L\right)\right)\,\mathrm{d}L \rightarrow \frac{Ha^2 \cdot L^2}{2 \cdot Lmax^2}$$

$$Lmax := Rp \cdot cos\left(beta\right) + sqrt\left(\left(Rp + Ha\right)^2 - Rp^2 \cdot sin\left(beta\right)^2\right)$$

l is from 0 to sqrt(4+8)
(4)

$$k := \sqrt{lmax^2 - hmax^2}$$

$$H(L) := k \cdot L$$

$$H(lmax) = ?$$

$$\int_0^{lmax} H(L) \cdot \left(\frac{d}{dL} H(L) \right) dL \rightarrow \frac{lmax^2 \cdot (lmax - hmax) \cdot (lmax + hmax)}{2}$$

$$\int H(L) \cdot \left(\frac{d}{dL} H(L) \right) dL \rightarrow \frac{L^2 \cdot (lmax - hmax) \cdot (lmax + hmax)}{2}$$

$$promaxj := \sqrt{lmax^2 - hmax^2}$$

$$\int_0^{projmax} \frac{(r(R) \cdot hmax)}{projmax} dR \rightarrow -\frac{hmax \cdot projmax}{2 \cdot Ha} + Adens0 \cdot hmax$$

$$hmax := 4$$

$$lmax := \sqrt{4 + 16}$$