$$\Omega = \iiint_v \frac{1}{r}\, dv \longrightarrow U = G\rho\,\Omega$$

$$U = G \sum_{l=1}^{m} \rho_l \Omega_l$$

$$\Omega_l = \| f_{ijk} \|$$

$$= (f + \cdots + f)\,\rho_l$$

$$= f_{222}\,\rho_l + \cdots - f_{111}\,\rho_l$$

$$\partial_\alpha U = G\rho\,\partial_\alpha \Omega \quad , \quad \alpha = x, y, z$$

$$V = -\mathrm{cm}\, h\, \nabla \Omega^T \hat{h}$$

$$\hat{h} = \begin{bmatrix} \cos I \cos \Omega \\ \cos I \sin \Omega \\ \sin I \end{bmatrix}$$

$$h\hat{h} = \begin{bmatrix} h_x \\ h_y \\ h_z \end{bmatrix}$$

$$= -\frac{\mathrm{cm}}{G\rho} \sum_{l=1}^{m} \left(h_x^l\, \partial_x \Omega_l + h_y^l\, \partial_y \Omega_l + h_z^l\, \partial_z \Omega_l \right)$$

g^x, g^x, g^z

$$= \left(-\mathrm{cm} \sum_{l=1}^{m} h_x^l\, \partial_x \Omega_l \right) + \cdots + \left(-\mathrm{cm} \sum h_z^l\, \partial_z \Omega_l \right)$$

$$B_\alpha = -\partial_\alpha V$$

$$B_\alpha = \left(\mathrm{cm} \sum h_x^l\, \partial_{\alpha x} \Omega_l \right) + \cdots + \left(\mathrm{cm} \sum h_z^l\, \partial_{\alpha z} \Omega_l \right)$$