student task

MEK4420

Ole Sandok

November 18th 2024

In this lab we look at a low cost sensor, and try to build a wave buoy.

Discussion

vi ønsker å løse integrallikningen:

$$-\pi\phi(\bar{x}\bar{y}) + \int_S \phi \frac{\partial}{\partial n} \ln r dS = \int_S \frac{\partial \phi}{\partial n} \ln r dS \tag{1}$$

der $\partial\phi/\partial n = n_1$ langs med S.

Diskret integrallikning.

$$-\pi\phi + \Sigma_{m=1}^{N} \phi_m(-\Delta\Theta_{n,m}) = \sum_{m=1}^{N} [\frac{\partial \phi}{\partial n}]_m h_{n,m} \tag{2}$$

Addert masse kan approksimeres slik:

$$m_{ij} = \rho \int_S \phi_j n_i dS \simeq \rho \sum_{m=1}^{N} [\phi_j]_m [n_i]_m \Delta S_m. \tag{3}$$

Figurer

Diskretisering av boks

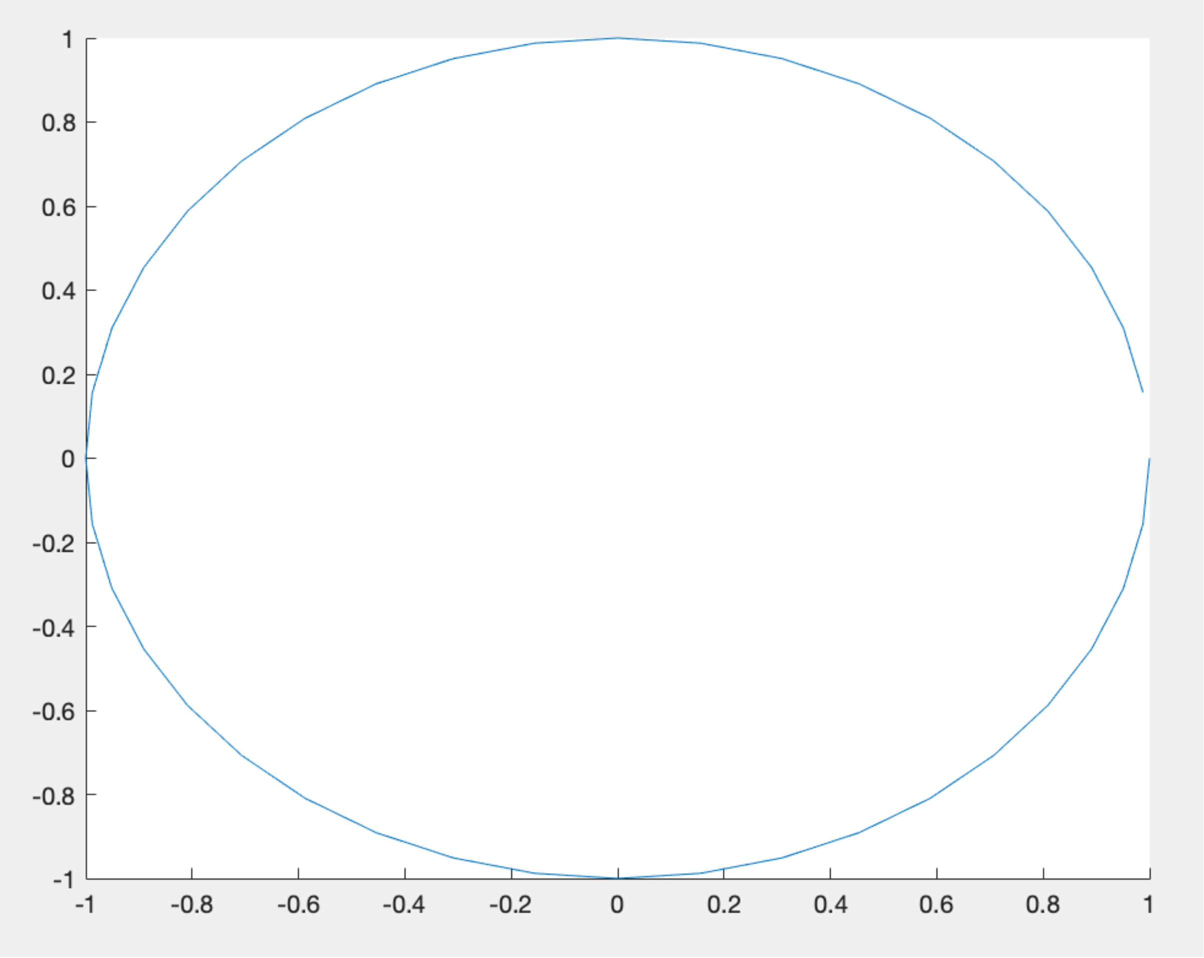

Figure 1

7.8

$$b_{22} = \frac{\bar{E}^{\infty} c_g + \bar{E}^{-\infty} c_g}{\frac{1}{2}|\xi|^2\omega^2} \tag{4}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g|amp^{-\infty}|^2 c_g + \frac{1}{2}\rho\ g|amp^{-\infty}|^2 c_g}{\frac{1}{2}|\xi|^2\omega^2} \tag{5}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g|amp^{-\infty}|^2(\frac{g}{2\omega}) + \frac{1}{2}\rho\ g|amp^{-\infty}|^2(\frac{g}{2\omega})}{\frac{1}{2}|\xi|^2\omega^2} \tag{6}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g\left|\xi A^{\infty}\frac{\omega^2}{g}\right|^2(\frac{g}{2\omega}) + \frac{1}{2}\rho\ g\left|\xi A^{-\infty}\frac{\omega^2}{g}\right|^2(\frac{g}{2\omega})}{\frac{1}{2}|\xi|^2\omega^2} \tag{7}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g\left|\xi A^{\infty}\frac{\omega^2}{g}\right|^2(\frac{g}{2\omega}) + \frac{1}{2}\rho\ g\left|\xi A^{-\infty}\frac{\omega^2}{g}\right|^2(\frac{g}{2\omega})}{\frac{1}{2}|\xi|^2\omega^2} \tag{8}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g|\xi|^2(\frac{\omega^2}{g})^2\left|A^{\infty}\right|^2(\frac{g}{2\omega}) + \frac{1}{2}\rho\ g|\xi|^2(\frac{\omega^2}{g})^2\left|A^{-\infty}\right|^2(\frac{g}{2\omega})}{\frac{1}{2}|\xi|^2\omega^2} \tag{9}$$

$$b_{22} = \frac{\frac{1}{2}\rho\ g|\xi|^2(\frac{\omega^2}{g})(\frac{\omega^2}{g})\left|A^{\infty}\right|^2(\frac{g}{2\omega}) + \frac{1}{2}\rho\ g|\xi|^2(\frac{\omega^2}{g})(\frac{\omega^2}{g})\left|A^{-\infty}\right|^2(\frac{g}{2\omega})}{\frac{1}{2}|\xi|^2\omega^2} \tag{10}$$

$$b_{22} = \frac{\cancel{\frac{1}{2}}\rho\ g\cancel{|\xi|^2}(\frac{\omega^2}{g})(\frac{\omega^2}{g})\left|A^{\infty}\right|^2(\frac{g}{2\omega}) + \cancel{\frac{1}{2}}\rho\ g\cancel{|\xi|^2}(\frac{\omega^2}{g})(\frac{\omega^2}{g})\left|A^{-\infty}\right|^2(\frac{g}{2\omega})}{\cancel{\frac{1}{2}}\cancel{|\xi|^2}\omega^2} \tag{11}$$

$$b_{22} = \rho\ g\cancel{(\frac{1}{g})}(\frac{\omega^2}{g})\left|A^{\infty}\right|^2(\frac{g}{2\omega}) + \rho\ g\cancel{(\frac{1}{g})}(\frac{\omega^2}{g})\left|A^{-\infty}\right|^2(\frac{g}{2\omega}) \tag{12}$$

$$\tag{13}$$

$$\cancelto{D}{+} + \cancel{22}00$$

References

[1]: Open Met Buoy, J. Rabault - DOI: 10.13140/RG.2.2.15826.07368