Homework 5: 2D waves

PHY250 - Fall 2021

Deadline: 11/29/2021

Exercise 1: Traveling waves

Simulate in Octave a traveling wave in 2D with an angular frequency $\omega = 1$ and amplitude $A = 1$ considering the following cases:

1. $\vec{k} = (2, 0)$.

2. $\vec{k} = 2 \cdot \hat{e}_r$, where $\hat{e}_r$ is the radial direction in circular coordinates.

3. $\vec{k} = (2, 2)$.

Exercise 2: Standing waves

Simulate in Octave standing waves in a plaque of dimensions 1x1, generated by traveling waves with angular frequency $\omega = 1$ and amplitude $A = 1$. Plot at least three different harmonics.

Exercise 3: Interference

Simulate in Octave the interference pattern produced by 2 sources in water separated by a distance $d = 10$ and an angular frequency $\omega = 1$.

1. choose one of the three cases of the exercise 2 to simulate the sources. Which one is the right choice? why?

2. What happens when you increase the distance d?

3. What happens when you modify the frequency of one of the sources?