

UNIVERSITY OF MIAMI
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

EEN 502/MMI361 Engineering Acoustics

Project No.2

EXPERIMENTING WITH ACOUSTIC FIELDS OF LOUDSPEAKER ARRAYS

A tapered loudspeaker array of length 1 m emits a 1500 Hz tone and it is observed at p: (5 m, 30° , φ).

1. Let its main lobe lie on the azimuth plane. Write a Matlab program to produce plots of:
 - a. The radiation pattern
 - b. The particle displacement in the immediate vicinity of the source
 - c. The particle displacement in the immediate vicinity of the observer

2. Let the array be swept for elevation angles ranging from $-\pi/2$ to $\pi/2$ in one second cycles, starting from $\theta = 0^\circ$. Write a Matlab program to produce the signal received by the observer over four seconds.
 - a. Simulate the sweeping process and observe if it meet the requirements
 - b. Plot the envelope of the received signal as a function of time
 - c. Play out the received signal. Amplify it if necessary.

You are required to present your report in a **web page** by the due date. Include all figures and all audio samples used or generated. Summarize your results and conclusions.

Date Due: Friday, October 24, 2008