

IN-CLASS PROBLEM

SUPPOSE WE DESIGN A 40-ELEMENT LINEAR ARRAY FOR NARROWBAND SIGNALS WITH FREQUENCY 100 Hz. THE PROPAGATION SPEED IS 1500 M/S.

a) WHAT SAMPLE SPACING MUST BE USED TO AVOID SPATIAL ALIASING?

WHAT IS THE RESULTING RESOLUTION (NULL-NULL BW) IN u -SPACE?

b) SUPPOSE WE USE THE SAME ARRAY FOR SIGNALS WITH $f=50$ Hz. IS THE RESOLUTION THE SAME? BETTER? WORSE?

DO WE HAVE A PROBLEM WITH ALIASING?

c) SUPPOSE WE USE THE SAME ARRAY FOR SIGNALS $w/f=200$ Hz. IS THE RESOLUTION THE SAME AS FOR 100 Hz? BETTER? WORSE?

IS THERE A PROBLEM WITH ALIASING?