Optics	and	Modern	Physics Lab
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Name:	Date:
Name:	Date:

Partner:\_\_\_\_\_

## **Ultrasonic Interference and Diffraction**

Your nicely formatted Excel worksheet should be placed in my inbox on \\files (\\files \Inbox \\Physics \Pogo \Optics Lab; only one Excel document per group; it should be titled "Ultrasonic-Smith&Jones.xls"), assuming that you and your partner are named Smith and Jones, respectively. Please save as .xls format (NOT .xlsx format). You may not change units.

Part I: As repeated in week 2				
	Value	Uncertainty		
frequency (kHz)				
slope of position vs. # of wavelengths graph (cm)				
measured speed of sound (m/s)				
theoretical speed of sound (m/s)				
Part II: Single source diffraction				
L (dist from source to bench, cm)				
<i>a</i> from fit (cm)				
Directly measured <i>a</i> (cm)				
Part 3: Two source interference/diffraction				
L (dist from sources to bench, cm)				
<i>a</i> from fit (cm)				
<i>d</i> from fit (cm)				
$x_{0a}$ (cm)				
$x_{0d}$ (cm)				
<i>Amplitude</i> (mV <sup>2</sup> )				
$I_{\text{background}} (\mathrm{mV}^2)$				

In space below, comment on your results. How does your measured speed of sound agree with the theoretical value? For the double "slit", how do your values of *a* and *d* compare with their directly measured values? Do you expect agreement here? Does your value of *a* agree with your value from the single source?