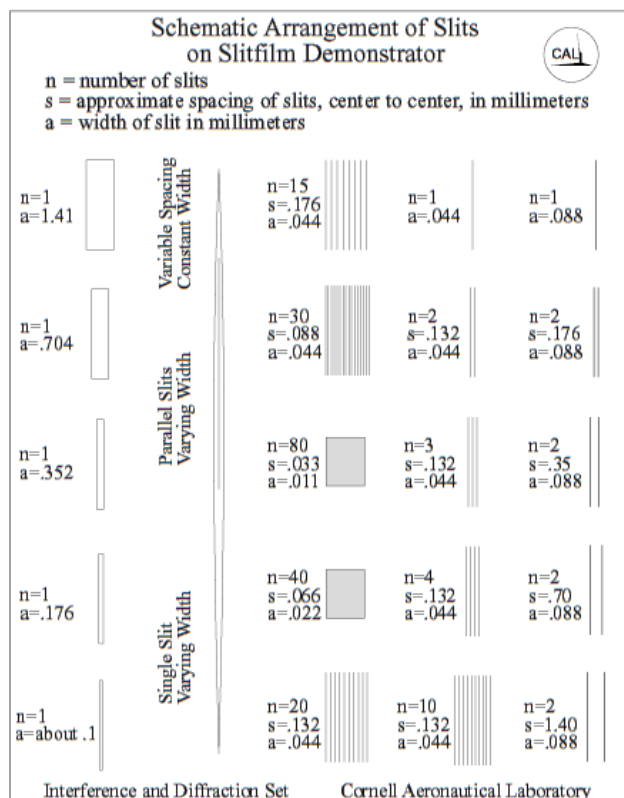


Name: _____ **Period:** _____ **Due Date:** _____

SLITFILM DEMONSTRATOR

Purpose: To introduce the Slitfilm Demonstrator.

Introduction: A diagram of the Slitfilm Demonstrator is shown below. All we need to accomplish today is to introduce you to the contents of this slide. It is organized into five category columns (**A, B, C, D, E**) of five rows (**1, 2, 3, 4, 5**) each. You can ignore column **B**, because we are not going to use it in this study.



A B C D E

5
4
3
2
1

Column **A** consists of 5 single slits of varying widths. The widest ones are too wide for our laser beam, but we will use the narrowest ones in rows 1, 2, and 3. Slits have two edges, the left and right; both interact with the laser beam.

Column **C** contains small gratings with variable slit widths, variable slit spacings, and a variable numbers of slits. We use these in Part 00, though we study diffraction gratings last.

Column **D** contains rows with variable numbers of slits of identical width and identical spacings – mini-gratings.

Column **E** contains two slits, except in **E-5**. The slit widths are the same, but the spacing varies.

For the single slit studies we use:
A-1, A-2, A-3, D-5 and E-5.

For the double slit studies we use:
D-4, E-4, E-3 and E-2.

Copies of this diagram are also posted in the lab.

The hardest part of using the Slitfilm Demonstrator is making sure you are hitting the correct target. It is easy to get confused in the dim light, so orient yourself carefully every time you use it. The other thing you should be aware of is that the dimensions of the slit width and slit spacing are always given in millimeters.

Finally, be aware that the true width and spacing dimensions sometimes differ from those indicated on the standard diagram. Don't be too surprised if your results differ from other groups or from the instructor's results. It is up to you to make the measurements that produce the most accurate results for your particular slide. Good results are also consistent results, so get suspicious when the data from related measurements don't seem to produce a self-consistent pattern.