ECE 415:
1-D Sonic Anemometer

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OBJECTIVE:

To design a long-path one-dimensional sonic anemometer that measures very slow air motion (1 mm/sec to 1 cm/sec). We plan to design the anemometer using four transducers, two of which will transmit an acoustic wave through air, and two that will receive the transmitted signals. We plan to use counters and a microcontroller to compare the velocity of these two waves in order to find the air velocity. Our goal is to minimize power consumption and system weight of the device.

The initial design is as follows. The two transducers will simultaneously send some sort of a signal, possibly a pulse. The pulse that reaches the receiver first will start the clock, and the second pulse will stop the clock. This data will be given to an algorithm that will calculate the wind speed and direction.