**AEE 342: Aerodynamics, Project 1c – Analysis of Symmetric Airfoils**

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In the simulation of flow behavior, it is important to properly constrain the system with fundamental ‘rules’ that reflect the laws of the physical system being modelled. These constraints to fluid behavior often seem trivial when observing a physical system, but may require some clever use of mathematical principles in order to force a simulation to behave a certain way. Throughout the course of this investigation of flowfields and their behavior, such principles are applied to model several systems and to fine-tune their properties. The simulated flow was introduced to two different solid bodies. First, an object with a shape similar to that of a bowling pin was modelled by placing three sources/sinks in the flowfield. Sources and sinks are point singularities that repel and attract a simulated flow, respectively. That is, they are points that radially emanate infinitely many vectors with magnitude equal to their strength, . This is a valuable construct in the simulation of fluid flows because sources and sinks may be placed in order to induce a certain curvature in the flowfield. As more points are placed, a boundary can become sufficiently defined so as to simulate the normal forces induced on the flowfield by the object being modelled.