



Figure 1: As an example, simulation of the airflow around an airfoil is modelled by a BVP. Airfoils are objects of shapes which can, for favourable airflow, generate lift (countering the gravitational forces) like the wings of a turbine or aircraft. For airflow simulation, the Navier-Stokes Equations (NSE) describe the physics at each point in the domain in the form of PDEs. To specify the inflow, outflow and the friction of the air with the airfoil we impose boundary conditions on the velocity and pressure at the surface of the airfoil and a rectangle around the airfoil marking the region of interest (ROI).

The airfoil is shown with a grey colour, in the space between the curves ABC and ADC. The domain on which the Navier-Stokes Equations (NSE) are to be solved is the region between the outer rectangle PQRS and the airfoil. The boundary conditions on the velocity and pressure are imposed in the rectangle PQRS, curves ABC and ADC which form the boundary of the computational domain.

Example of Region of Interest