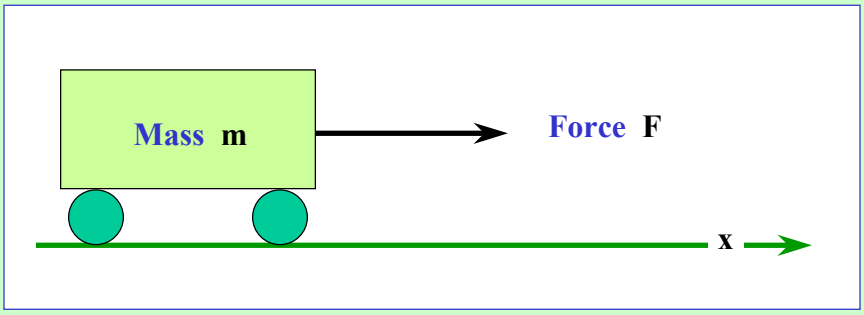
Rigid body dynamics



Newton's equation of motion is: $m\frac{d^2x}{dt^2} = F$

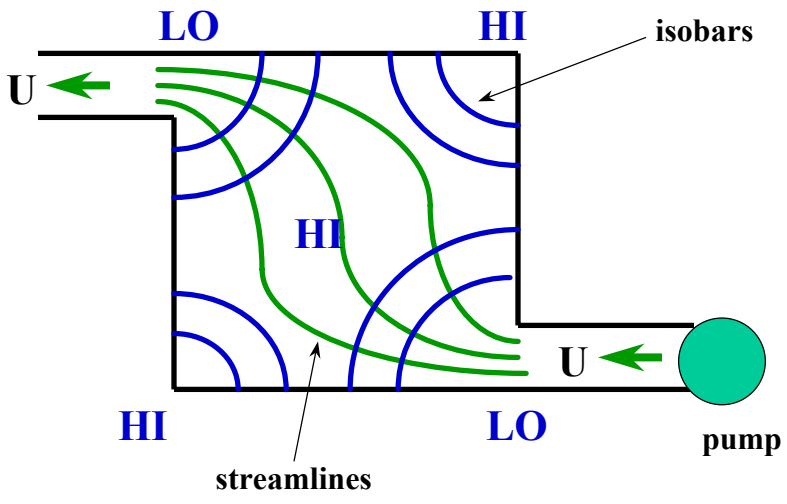
Problem is to calculate x(t) given the force F

Fluid dynamics problems

- **The force field is determined by the overall constraints provided by**
  - **the requirement of continuity**
  - **the boundary conditions**
- **In particular, the pressure field at any instant is determined by the flow configuration**
  - **I will now illustrate this with an example!**

Fluid dynamics problems

- The object is to calculate the flow field **U**(x,y,z,t) in a given region subject to appropriate boundary conditions and the constraint of continuity.
- The calculation of the force field (i.e. the pressure field) may not be necessary, depending on the solution method.



Assumptions: inviscid, irrotational, incompressible flow