



# Hydraulic Engineering and Infrastructures

Civil Engineering Department

Fluid Mechanics Review

## 1 Momentum conservation for a bent pipe ††

A circular pipe of section  $S_1$  transports a fluid of unit mass  $\rho$  at a flowrate  $Q$  as shown in Figure 1. The pipe has a bend with an angle  $\alpha$  and ends in a narrower section  $S_2$ . Knowing the pressure at both ends  $p_1$  and  $p_2$ , compute the force applied on the bend.

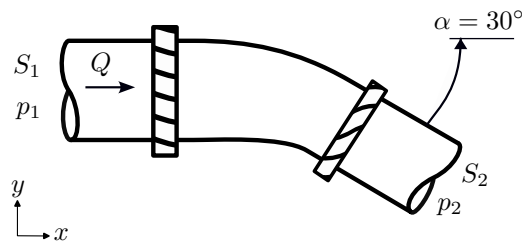


Figure 1: Bent pipe.