



Current in a pipe

Stream in a tube

In the tube is a incompressible liquid. The stream in a tube must be constant.

continuity equation: $Q_1 = Q_2$
or
 $A_1 \times v_1 = A_2 \times v_2$

Playcontrol

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Authors: BIGS 2007 (C. Bluck, J. Gans, A. Gleixner; Prof. W. Heimbrodtt; S. Stallmann,)

A_1 - is the streamed cross-section on the left side
 v_1 - is the corresponding streaming velocity

A_2 - is the streamed cross-section in the middle
 v_2 - is the corresponding streaming velocity in the middle part

$V = A \cdot v \cdot dt$ leads to the streamed volume

The animation shows a streamed tube where no liquid can leave the tube through the body.

On the one side the volume $A_1 \cdot v_1 \cdot dt$ stream into the tube and on the other the volume $A_2 \cdot v_2 \cdot dt$ streams out of the tube.

As a precondition we assume the liquid to be incompressible both volumes have to be the identical according to the continuity equation:

$$A_1 \cdot v_1 = A_2 \cdot v_2.$$

