

## Hydraulic Jump

Assumes a rectangular channel of constant width and horizontal bed.

Continuity and the momentum principle yield the ratio of sequent depths as

$$r \equiv \frac{h_2}{h_1} = \frac{1}{2}(-1 + \sqrt{1 + 8\text{Fr}_1^2})$$

The Froude number is defined by:

$$\text{Fr} = \frac{u}{\sqrt{gh}}$$

The variables are:

$u$  = velocity;

$h$  = water depth;

$\text{Fr}$  = Froude number.

Subscripts 1 and 2 denote conditions upstream and downstream of the jump respectively.