UNENE Graduate Course
Reactor Thermal-Hydraulics Design and Analysis

McMaster University
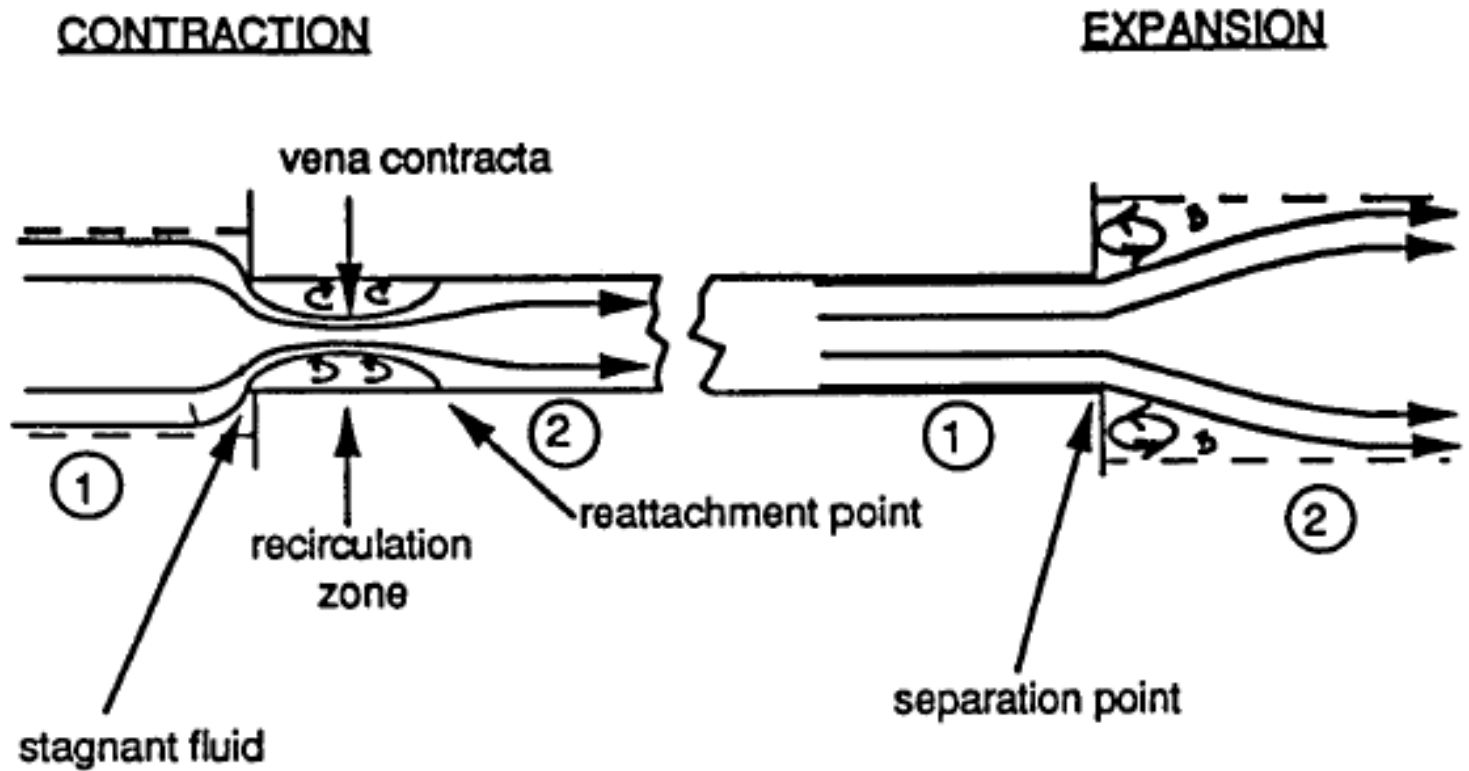Whitby
March 11-12, March 25-26,
April 8-9, April 22-23, 2006
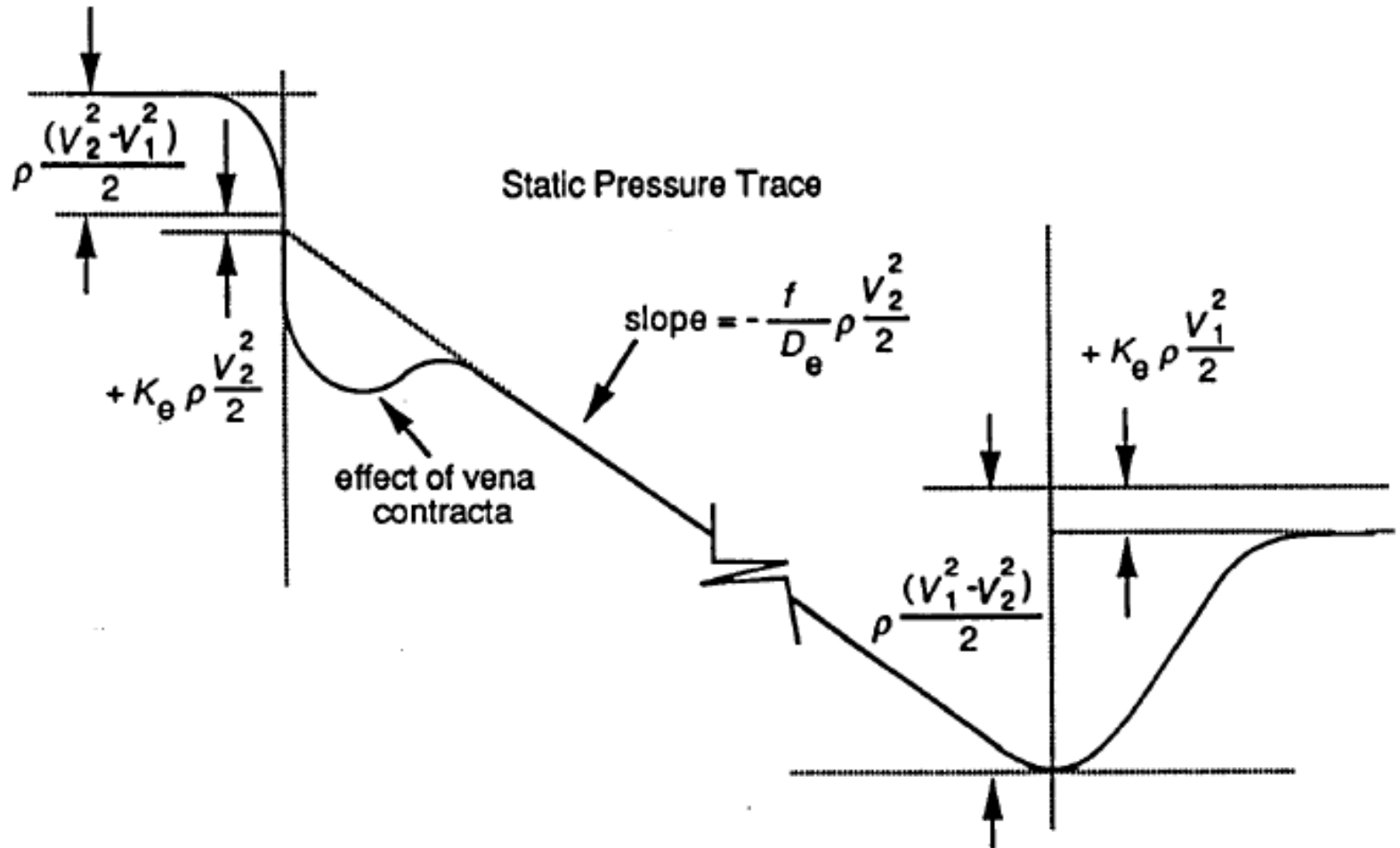
Pressure Drop

Dr. Nik Popov

Pressure Drop

CONTRACTION

vena contracta

② ①

stagnant fluid

recirculation zone

reattachment point

EXPANSION

① ②

separation point

Pressure Drop

Static Pressure Trace

$$\rho \frac{(V_2^2 - V_1^2)}{2}$$

$$+K_e\, \rho\, \frac{V_2^2}{2}$$

effect of vena contracta

$$\text{slope} = -\frac{f}{D_e}\, \rho\, \frac{V_2^2}{2}$$

$$+K_e\, \rho\, \frac{V_1^2}{2}$$

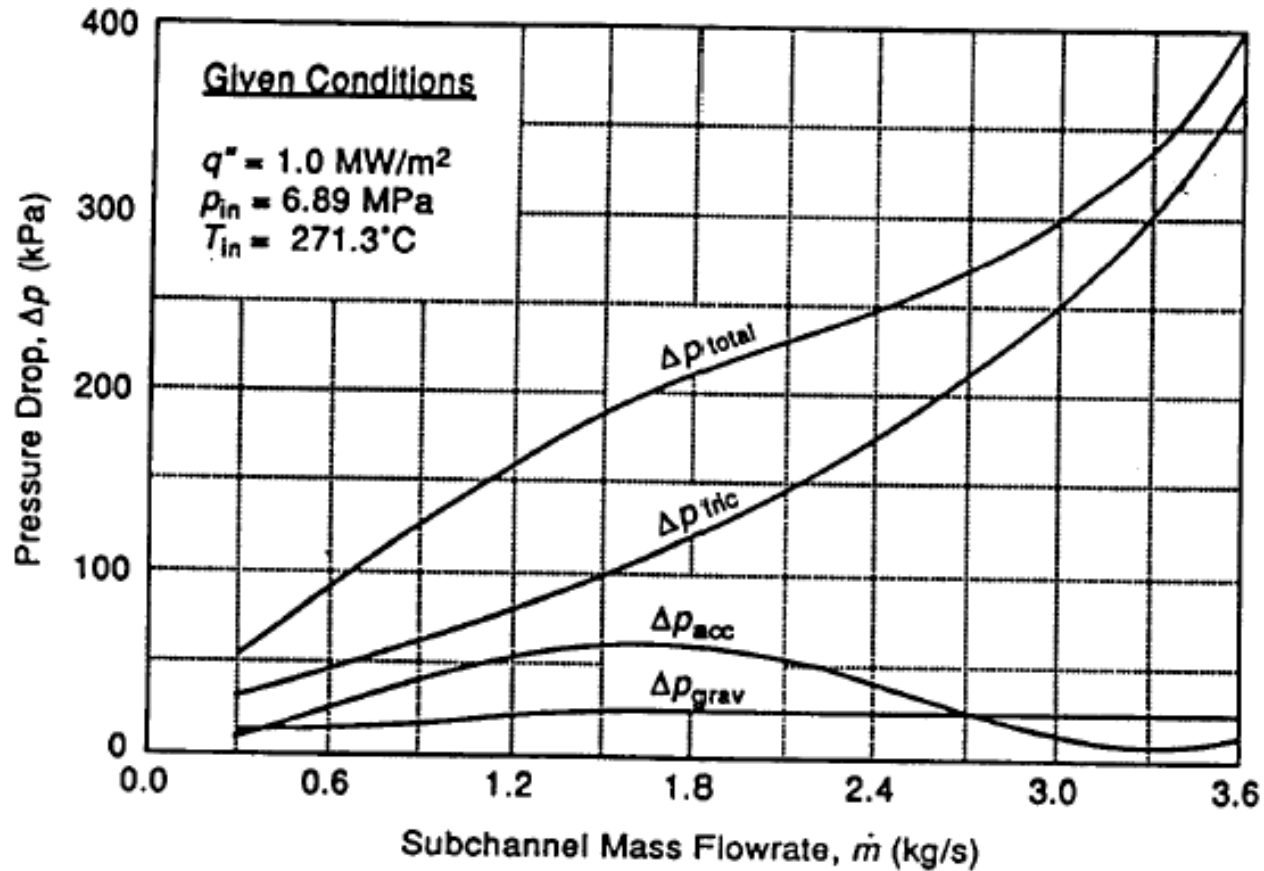$$\rho \frac{(V_1^2 - V_2^2)}{2}$$

Pressure Drop

Figure 13-16 Components of total pressure drop in a 7 × 7 BWR channel as a function of flow (Example 13-5, case A).
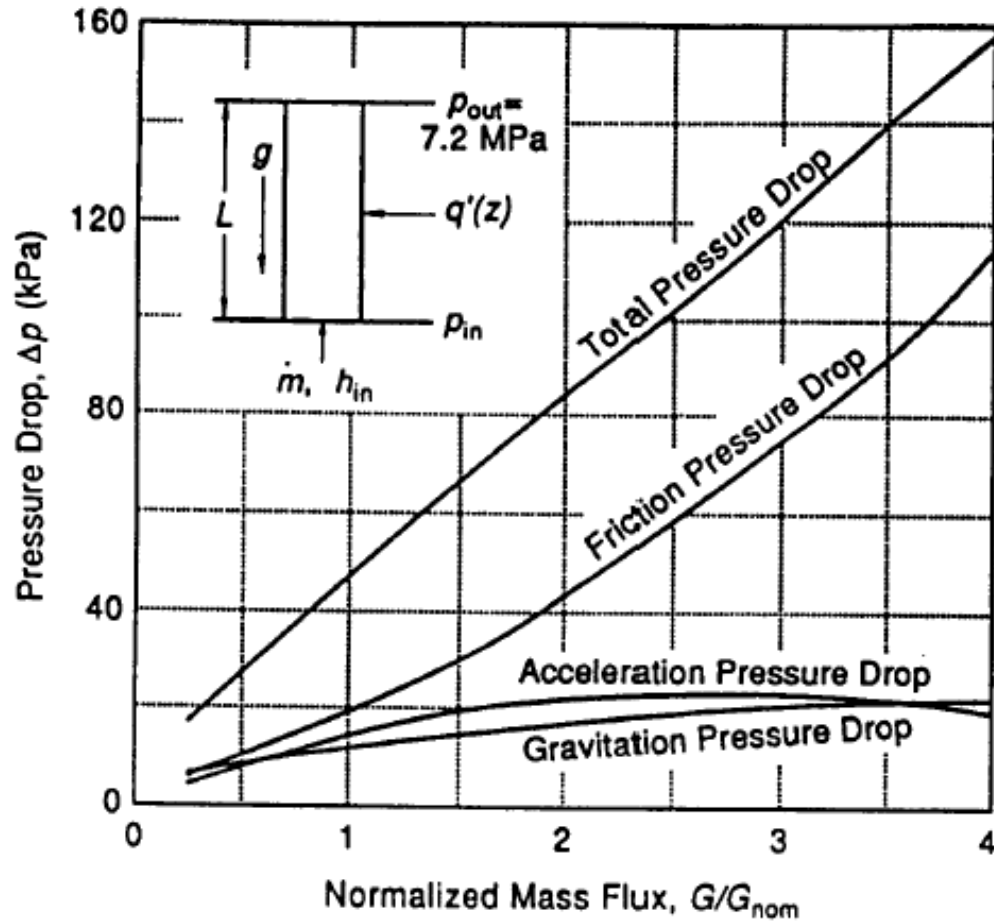
Pressure Drop

Figure 13-11 Pressure drop components in the BWR channel of Example 13-4. The mass flux at the nominal condition is $G_{nom} = 2000$ kg/m²s.

Questions?