

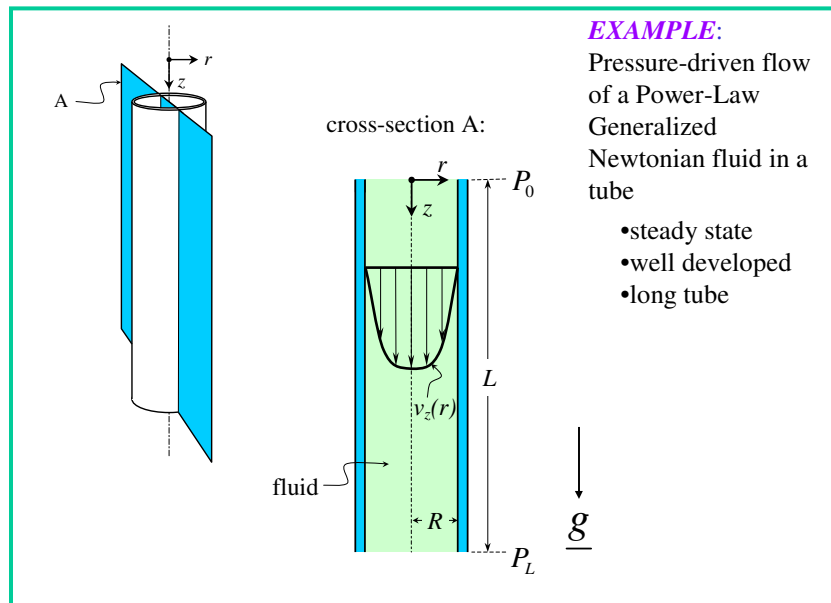
## What now?

- Predict material functions with the Generalized Newtonian Constitutive Equation.

*Example: Elongational viscosity, etc.*

- Calculate velocity and stress fields predicted by Generalized Newtonian Constitutive Equations

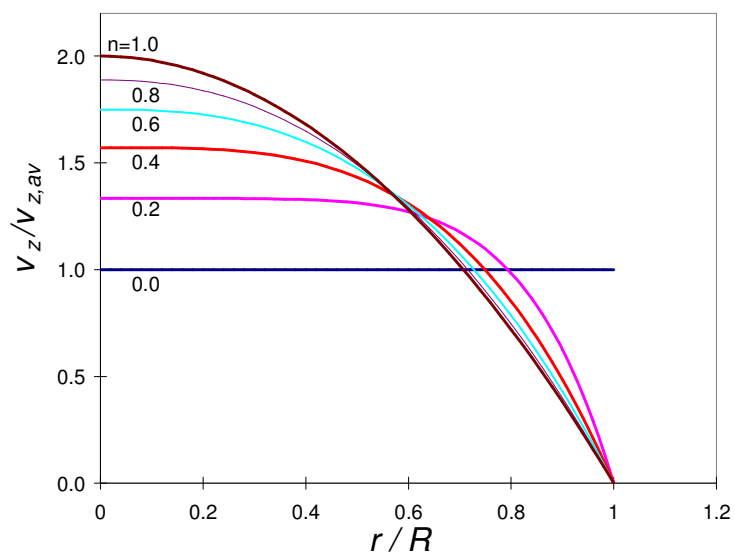
*Example: Poiseuille flow, drag flow, etc.*



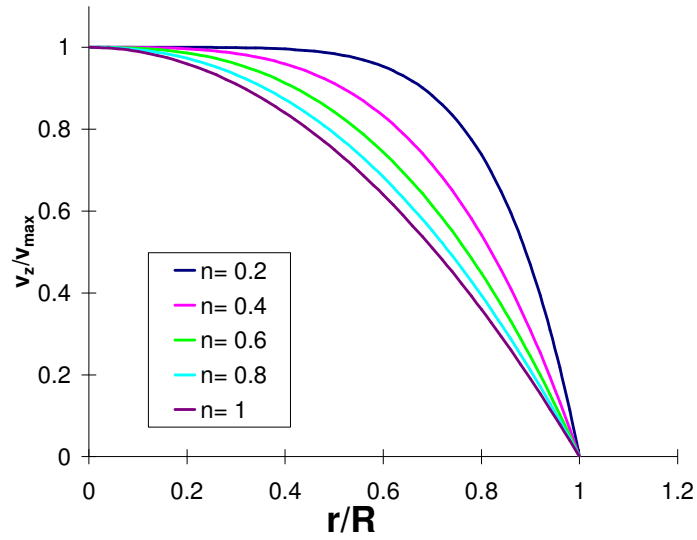
Velocity field  
Poiseuille flow of a power-law fluid:

$$v_z(r) = \left( \frac{R(L\rho g + P_o - P_L)}{2Lm} \right)^{\frac{1}{n}} \left( \frac{R}{\frac{1}{n} + 1} \right) \left( 1 - \left( \frac{r}{R} \right)^{\frac{1}{n} + 1} \right)$$

Solution to Poiseuille flow in a tube  
incompressible, power-law fluid

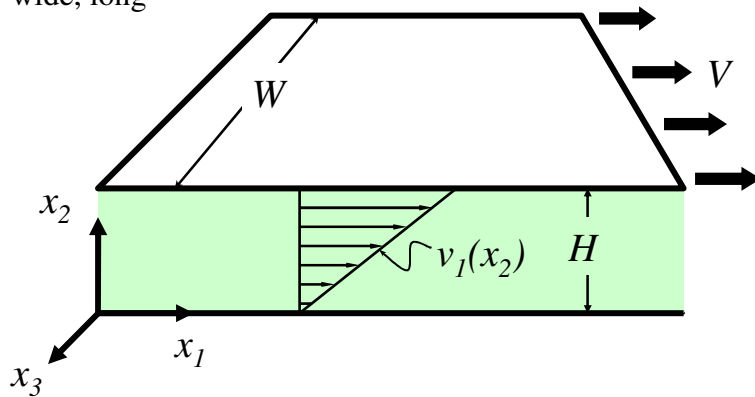


Solution to Poiseuille flow in a tube  
incompressible, power-law fluid



**EXAMPLE: Drag flow of a Power-Law GNF between infinite parallel plates**

- steady state
- incompressible fluid
- infinitely wide, long



**EXAMPLE: Pressure-driven flow of a Power-Law GNF between infinite parallel plates**

- steady state
- incompressible fluid
- infinitely wide, long

