Chapman-Enskog Development:

$$f = \rho(\mathbf{x}) \exp\left(-\frac{|\mathbf{v} - \bar{\mathbf{v}}(\mathbf{x})|^2}{2T(\mathbf{x})}\right)(1 + \phi^{(2)}) + ...$$

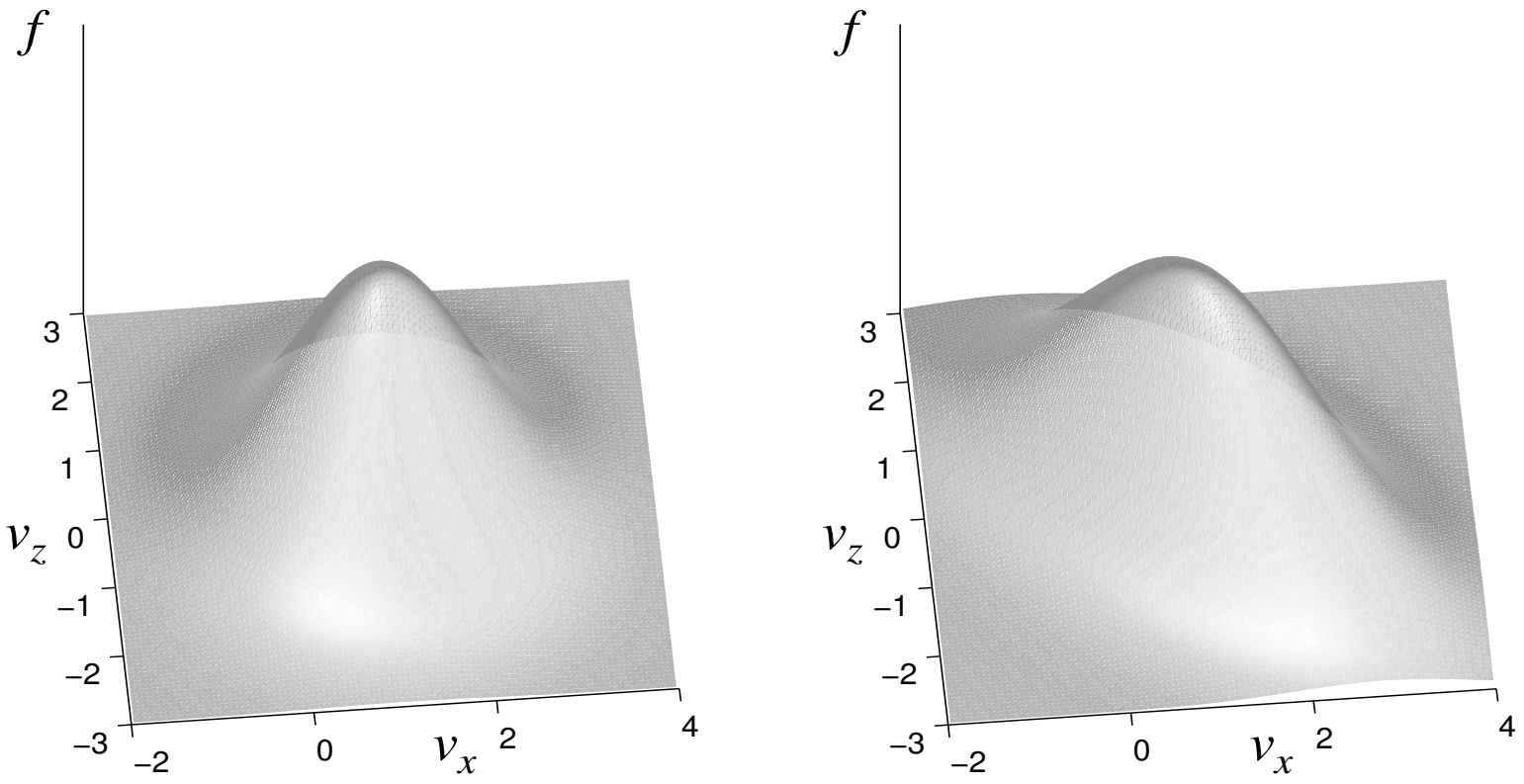
Quasi-Maxwell Model Solution: $\quad \phi^{(2)}_{heat} \;+\; \phi^{(2)}_{shear}$

$$\phi^{(2)}_{shear} = \frac{-\mu}{\rho T(\mathbf{x})^2}(\mathbf{v} - \bar{\mathbf{v}})^T \mathbf{D}(\mathbf{x})(\mathbf{v} - \bar{\mathbf{v}}),$$

$$D_{\alpha\beta}(\mathbf{x}) = \frac{1}{2}\left(\frac{\partial \bar{v}_\alpha}{\partial x_\beta} + \frac{\partial \bar{v}_\beta}{\partial x_\alpha}\right), \quad \mu = -\frac{(2T)^{1/2}}{2\sigma\lambda_{02}}.$$

We then approximate

$$1 + \phi^{(2)} \;\approx\; \exp(\phi^{(2)})$$

Couette flow:

$$(v_x - \bar{v}_x(z),\ \ v_y,\ \ v_z) \quad \cdot \quad \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & 0 & \tau_{xz}/\rho T \\ 0 & 1 & 0 \\ \tau_{xz}/\rho T & 0 & 1 \end{pmatrix} \quad \cdot \quad \begin{pmatrix} v_x - \bar{v}_x(z) \\ v_y \\ v_z \end{pmatrix}$$