• New closure is outflow is some ratio of $\langle\phi\rangle_R$ & $\langle\phi\rangle_L$

Johns: $\psi^c_{i+1/2} = \gamma_i \psi^c_{a,i} + \psi^c_{x,i}$, $\mu > 0$

$$\gamma_i = \frac{\psi^s_{i+1/2} - \psi^s_{x,i}}{\psi^s_a}, \quad \mu > 0$$

$$\psi_{a,i} = \frac{\langle\psi\rangle_{L,i} + \langle\psi\rangle_{R,i}}{2} \qquad \psi_{x,i} = \frac{3}{2}\left(\langle\psi\rangle_R - \langle\psi\rangle_L\right)$$

• For $\mu > 0$ (w/ $\gamma = 1$)

$$\psi_{i+1/2} = \psi_a + \psi_x = \frac{\langle\psi\rangle_L + \langle\psi\rangle_R}{2} + \frac{3}{2}\langle\psi\rangle_R - \frac{3}{2}\langle\psi\rangle_L = 2\langle\psi\rangle_R - \langle\psi\rangle_L$$

✓ matches old results

• Add Gamma:

$$\psi_{i+1/2} = \frac{1}{2}\left(\left(\langle\psi\rangle_L + \langle\psi\rangle_R\right)\gamma + 3\left(\langle\psi\rangle_R - \langle\psi\rangle_L\right)\right)$$

$$\psi_{i+1/2} = \left(\frac{3+\gamma}{2}\right)\langle\psi\rangle_R - \left(\frac{3-\gamma}{2}\right)\langle\psi\rangle_L$$

• Different than following closure:

$$\psi_{i+1/2} = \alpha\langle\psi\rangle_R + (1-\alpha)\langle\psi\rangle_L \Leftarrow \text{allows for step, LD, or LLD}$$

• In terms of ψ_x & ψ_a:

$$\psi_{i+1/2} = \psi_a + \left(\frac{2\alpha - 1}{3}\right)\psi_x \quad \begin{cases} \alpha = 2, & \text{LD} \\ \alpha = 1, & \text{Lumped LD} \\ \alpha = \frac{1}{2}, & \text{step} \end{cases}$$