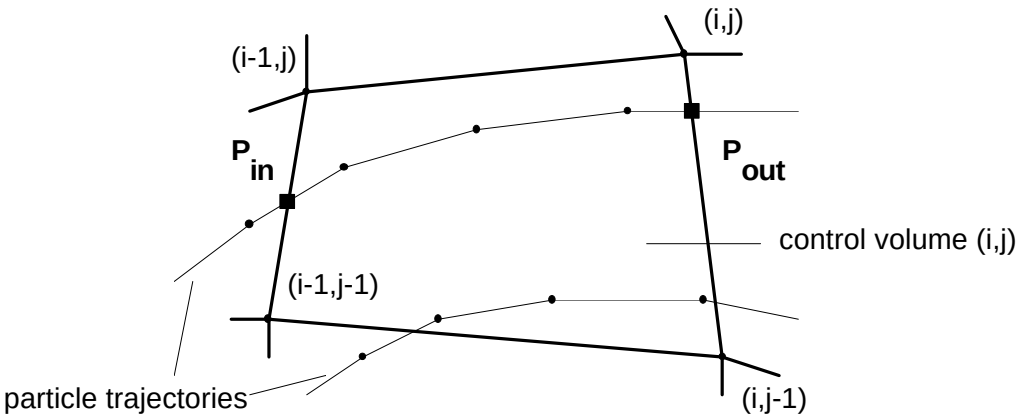
Equations of motion of the disperse phase – II

- $C_W = C_W(Re_P)$ obtained from correlations by Morsi/Alexander
- $C_A = 6.48$ from Saffman
- $C_M = (0.4 \pm 0.1)\,\sigma$ for $|\sigma| \leq 1$; $C_M \equiv (0.4 \pm 0.1)$ for $|\sigma| < 1$
- $\xi_m = \xi_m(Re_\omega)$ from Sawatzki
- Source terms in the Navier–Stokes equations due to momentum transfer between phases (PSI–cell model by C.T. Crowe) :



$$S^P_{u_{Fi}} = -\frac{1}{V_{ij}} \sum_{n \in \mathrm{CV}} \dot{N}_P \int_{t_{in}}^{t_{out}} (\overrightarrow{F_W} + \overrightarrow{F_M} + \overrightarrow{F_A})\, dt$$

$$= -\frac{1}{V_{ij}} \sum_{n \in \mathrm{CV}} m_P \dot{N}_P \left[u_{Pi,out} - u_{Pi,in} - g_i \left(\frac{\rho_P - \rho_F}{\rho_P + \rho_F/2} \right) (t_{out} - t_{in}) \right]$$

- if turbulence model for the fluid phase is present $\Longrightarrow$ **L**agrangian **s**tochastic–**d**eterministic turbulence model (LSD or discret eddy model) as proposed by Sommerfeld, Schönung, Milojević