$$\boldsymbol{C_{3,i+1} = C_{3,i} + \frac{C_{1,i} - C_{3,i}}{\tau} \frac{1-\beta}{(1-\alpha)\,0.5}\,\Delta t}$$

$$(1-\beta)\,\nu\,C_1 = (1-\beta)\,\nu\,C_3 + (1-\alpha)\,0.5\,V\,\frac{\mathrm{d}C_3}{\mathrm{d}t} \implies$$

$$\implies (1-\beta)\,C_1 = (1-\beta)\,C_3 + (1-\alpha)\,0.5\,\tau\,\frac{\mathrm{d}C_3}{\mathrm{d}t} \implies$$

$$\implies \frac{\mathrm{d}C_3}{\mathrm{d}t} = \frac{C_1 - C_3}{\tau}\,\frac{1-\beta}{(1-\alpha)\,0.5} \implies$$

$$\implies \frac{\Delta C_3}{\Delta t} = \frac{C_{3,i+1} - C_{3,i}}{\Delta t} = \frac{C_{1,i} - C_{3,i}}{\tau}\,\frac{1-\beta}{(1-\alpha)\,0.5} \implies$$

$$\implies C_{3,i+1} = C_{3,i} + \frac{C_{1,i} - C_{3,i}}{\tau}\,\frac{1-\beta}{(1-\alpha)\,0.5}\,\Delta t$$