

DLN 2.4.6 contd

The corrector formula is

$$y^{n+1} = y^n + h \sum_{k=0}^3 \tilde{a}_k \vec{F}^{n+1-k} \quad n=3 \Rightarrow \vec{y}^4 = \vec{y}^3 + h \sum_{k=0}^3 \tilde{a}_k \vec{F}^{4-k} \quad \text{or}$$

$$\vec{y}^4 = \vec{y}^3 + h \left[\tilde{a}_0^3 \vec{F}^4 + \tilde{a}_1^3 \vec{F}^3 + \tilde{a}_2^3 \vec{F}^2 + \tilde{a}_3^3 \vec{F}^1 \right] \quad \text{or}$$

$$\vec{y}^4 = \vec{y}^3 + h \tilde{a}_0^3 \vec{F}^4 + h \left[\tilde{a}_1^3 \vec{F}^3 + \tilde{a}_2^3 \vec{F}^2 + \tilde{a}_3^3 \vec{F}^1 \right] \quad \text{or}$$

$$\vec{y}^4 = \vec{y}^3 + \frac{1}{3} \frac{9}{24} \vec{F}^4 + \frac{1}{3} \left[\frac{19}{24} \vec{F}^3 - \frac{5}{24} \vec{F}^2 + \frac{1}{24} \vec{F}^1 \right] \quad \text{corrector}$$

Put in the numbers \Rightarrow

$$\vec{y}^4 = \frac{1}{3} \frac{9}{24} \vec{F}^4 + \left(\begin{matrix} 1.15853 \\ 1.45970 \end{matrix} \right) + \frac{1}{3} \left[\begin{matrix} 19 \\ 24 \end{matrix} \left(\begin{matrix} 1.45970 \\ .84147 \end{matrix} \right) - \frac{5}{24} \left(\begin{matrix} 1.21112 \\ .61837 \end{matrix} \right) + \frac{1}{24} \left(\begin{matrix} 1.05505 \\ .32719 \end{matrix} \right) \right]$$

Working out the numbers above gives