ASTR 5463 Final Project: Title

Authors

1 Introduction

2 Methods

For $i = 2, ..., N-1$,

$$\begin{aligned}
\alpha_i^- &= e_{0,i} + \frac{e_{2,i} - (\Delta\tau_i + 2\Delta\tau_{i-1})e_{1,i}}{\Delta\tau_{i-1}(\Delta\tau_i + \Delta\tau_{i-1})}, \\
\beta_i^- &= \frac{(\Delta\tau_i + \Delta\tau_{i-1})e_{1,i} - e_{2,i}}{\Delta\tau_{i-1}\Delta\tau_i} \\
\gamma_i^- &= \frac{e_{2,i} - \Delta\tau_{i-1}e_{1,i}}{\Delta\tau_i(\Delta\tau_i + \Delta\tau_{i-1})} \\
\alpha_i^+ &= \frac{e_{2,i+1} - \Delta\tau_i e_{1,i+1}}{\Delta\tau_{i-1}(\Delta\tau_i + \Delta\tau_{i-1})} \\
\beta_i^+ &= \frac{(\Delta\tau_i + \Delta\tau_{i-1})e_{1,i+1} - e_{2,i+1}}{\Delta\tau_{i-1}\Delta\tau_i} \\
\gamma_i^+ &= e_{0,i+1} + \frac{e_{2,i+1} - (\Delta\tau_{i-1} + 2\Delta\tau_i)e_{1,i+1}}{\Delta\tau_i(\Delta\tau_i + \Delta\tau_{i-1})},
\end{aligned}$$

where

$$\begin{aligned}
e_{0,i} &= 1 - e^{-\Delta\tau_{i-1}}, \\
e_{1,i} &= \Delta\tau_{i-1} - e_{0,i} \\
e_{2,i} &= (\Delta\tau_{i-1})^2 - 2e_{1,i}.
\end{aligned}$$

$$\begin{aligned}
\mathrm{i}_{i-1}^-(\mu,\nu) &= \Delta\mathrm{i}_{i-1}^-(S,\mu,\nu) \\
&= \gamma_{i-1}^-, \\
\mathrm{i}_i^-(\mu,\nu) &= \mathrm{i}_{i-1}^-(\mu,\nu)e^{-\Delta\tau_{i-1}} + \Delta\mathrm{i}_i^-(S,\mu,\nu) \\
&= \gamma_{i-1}^- e^{-\Delta\tau_{i-1}} + \beta_i^-, \\
\mathrm{i}_{i+1}^-(\mu,\nu) &= \mathrm{i}_i^-(\mu,\nu)e^{-\Delta\tau_{i-1}} + \Delta\mathrm{i}_{i+1}^-(S,\mu,\nu) \\
&= [\gamma_{i-1}^- e^{-\Delta\tau_{i-1}} + \beta_i^-]e^{-\Delta\tau_i} + \alpha_{i+1}^-,
\end{aligned}$$

$$
\begin{aligned}
\mathrm{i}^{+}_{i+1}(\mu,\nu) &= \Delta\mathrm{i}^{+}_{i+1}(S,\mu,\nu) \\
&= \alpha^{+}_{i+1}, \\
\mathrm{i}^{+}_{i}(\mu,\nu) &= \mathrm{i}^{+}_{i+1}(\mu,\nu)e^{-\Delta\tau_i} + \Delta\mathrm{i}^{+}_{i}(S,\mu,\nu) \\
&= \alpha^{+}_{i+1}e^{-\Delta\tau_i} + \beta^{+}_{i}, \\
\mathrm{i}^{+}_{i-1}(\mu,\nu) &= \mathrm{i}^{+}_{i}(\mu,\nu)e^{-\Delta\tau_{i-1}} + \Delta\mathrm{i}^{+}_{i-1}(S,\mu,\nu) \\
&= [\alpha^{+}_{i+1}e^{-\Delta\tau_i} + \beta^{+}_{i}]e^{-\Delta\tau_{i-1}} + \gamma^{+}_{i-1}.
\end{aligned}
$$

3 Results

4 Conclusion

References