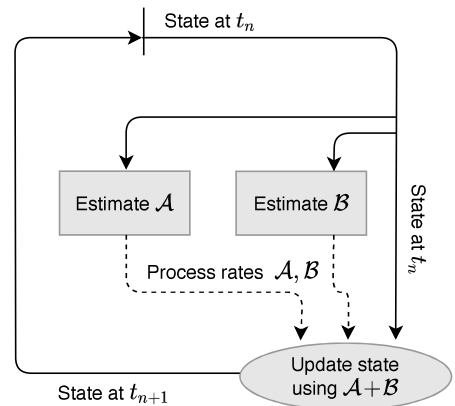


(a1) Parallel splitting, flowchart description**(b1) Parallel splitting, pseudo-code description**

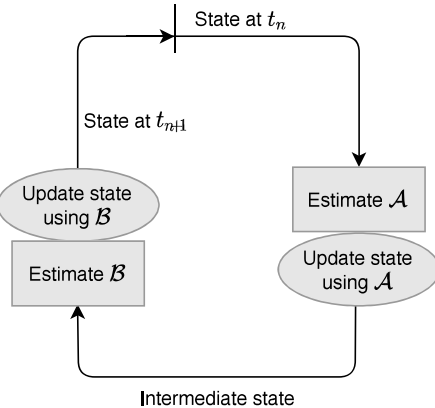
$$q^n \xrightarrow{\text{apply } A \text{ process for duration } \Delta t} q_A^{n+1}; \quad \text{let } A^* = \frac{q_A^{n+1} - q^n}{\Delta t}$$

$$q^n \xrightarrow{\text{apply } B \text{ process for duration } \Delta t} q_B^{n+1}; \quad \text{let } B^* = \frac{q_B^{n+1} - q^n}{\Delta t}$$

$$\text{Let } q^{n+1} = q^n + \Delta t(A^* + B^*).$$

(c1) Parallel splitting, ODE description

1. Solve for $q_A(t_{n+1})$ given $\frac{dq_A}{dt} = A(q_A)$ with $q_A(t_n) = q^n$.
2. Solve for $q_B(t_{n+1})$ given $\frac{dq_B}{dt} = B(q_B)$ with $q_B(t_n) = q^n$.
3. Let $A^* = \frac{q_A^{n+1} - q^n}{\Delta t}$ and $B^* = \frac{q_B^{n+1} - q^n}{\Delta t}$.
4. Let $q^{n+1} = q^n + \Delta t(A^* + B^*)$.

(a2) Sequential splitting, flowchart description**(b2) Sequential splitting, pseudo-code description**

$$q^n \xrightarrow{\text{apply } A \text{ process for duration } \Delta t} q_A^{n+1}$$

$$q^A \xrightarrow{\text{apply } B \text{ process for duration } \Delta t} q_B^{n+1}$$

$$\text{Let } q^{n+1} = q_B^{n+1}.$$

(c2) Sequential splitting, ODE description

1. Solve for $q_A(t_{n+1})$ given $\frac{dq_A}{dt} = A(q_A)$ with $q_A(t_n) = q^n$.
2. Solve for $q_B(t_{n+1})$ given $\frac{dq_B}{dt} = B(q_B)$ with $q_B(t_n) = q_A^{n+1}$.
3. Let $q^{n+1} = q_B^{n+1}$.