

Implementations of OCT

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OCT with Full Storage of Backward-Propagated States

OCT with Full Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_1

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

Ψ_t

Ψ_i

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT with Full Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_1

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

$\Psi_{bw}(t)$

Ψ_t

Ψ_i

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

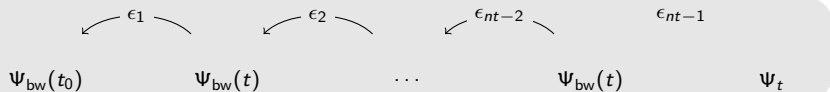
...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT with Full Storage

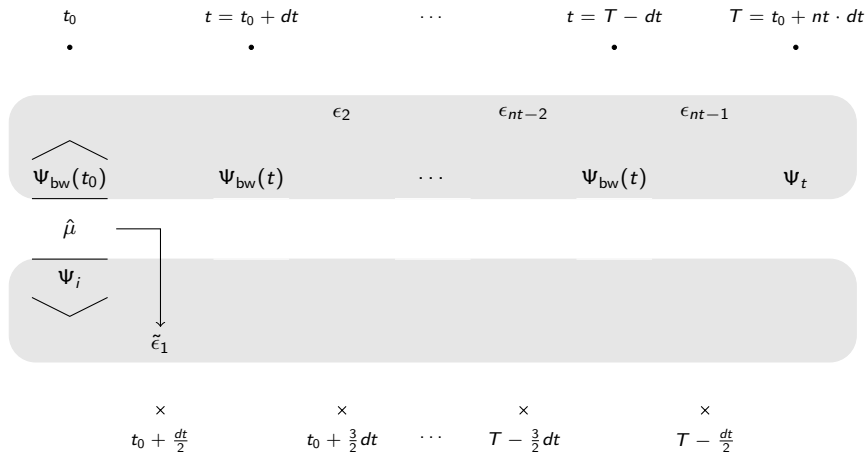
t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •



Ψ_i

\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

OCT with Full Storage



OCT with Full Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_2 ϵ_{nt-2} ϵ_{nt-1}
 $\Psi_{bw}(t_0)$ $\Psi_{bw}(t)$... $\Psi_{bw}(t)$ Ψ_t

Ψ_i $\Psi_{fw}(t)$

$\tilde{\epsilon}_1$

\times
 $t_0 + \frac{dt}{2}$

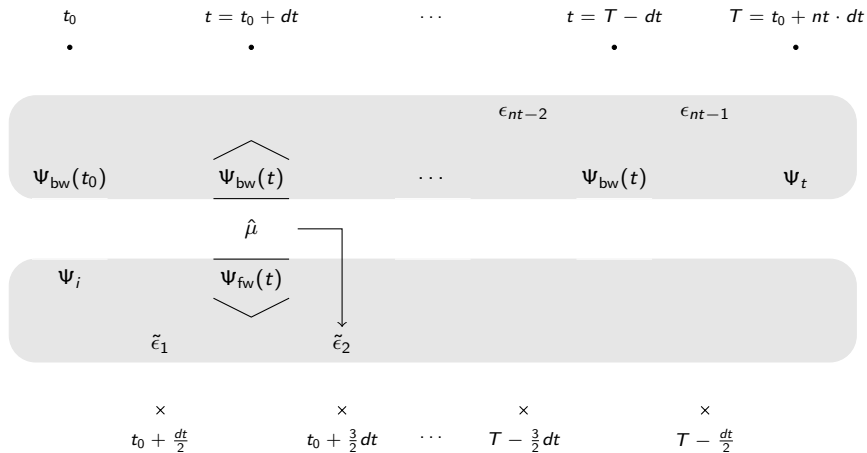
\times
 $t_0 + \frac{3}{2}dt$

...

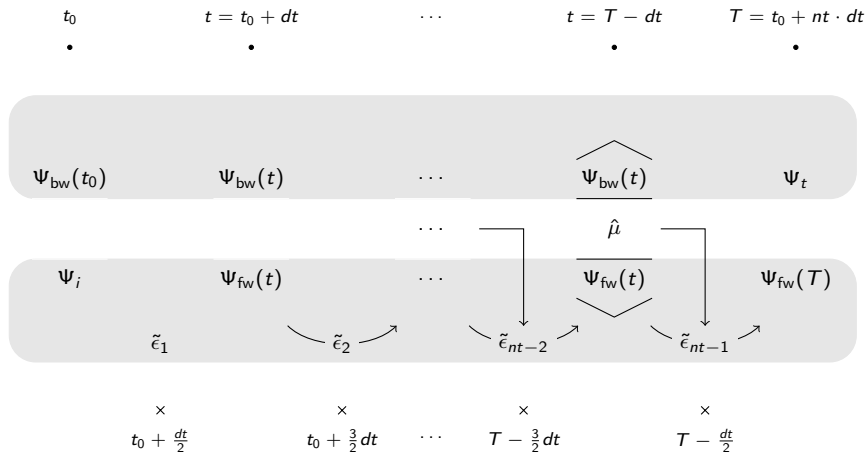
\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT with Full Storage



OCT with Full Storage



OCT with Full Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$

• • • •

$\Psi_{\text{bw}}(t_0)$

$\Psi_{\text{bw}}(t)$

...

$\Psi_{\text{bw}}(t)$

Ψ_t

Ψ_i

$\Psi_{\text{fw}}(T)$

$\tilde{\epsilon}_1$

$\tilde{\epsilon}_2$

$\tilde{\epsilon}_{nt-2}$

$\tilde{\epsilon}_{nt-1}$

×

$t_0 + \frac{dt}{2}$

×

$t_0 + \frac{3}{2}dt$

...

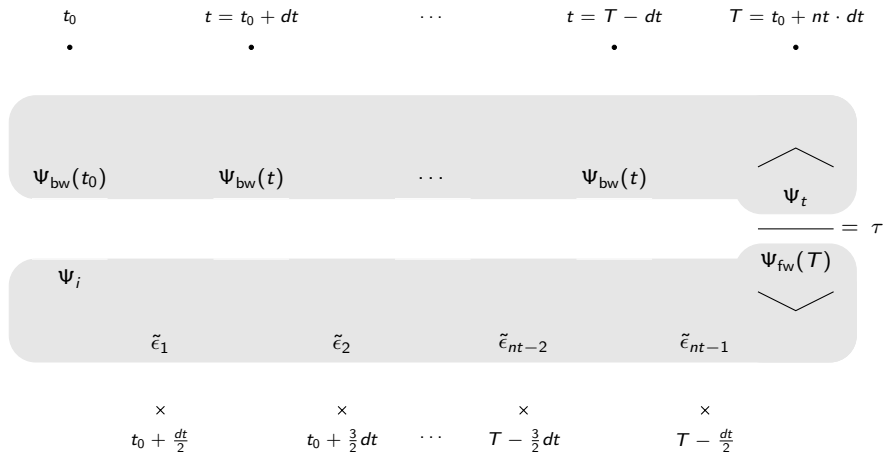
×

$T - \frac{3}{2}dt$

×

$T - \frac{dt}{2}$

OCT with Full Storage



OCT with No Storage of Backward-Propagated States

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$

ϵ_1

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

Ψ_t

Ψ_i

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_1

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

$\Psi_{bw}(t)$

Ψ_t

Ψ_i

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

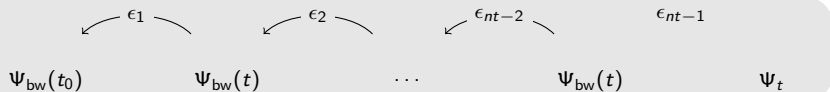
...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •



Ψ_i

\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_1

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

$\Psi_{bw}(t_0)$

Ψ_t

Ψ_i

\times
 $t_0 + \frac{dt}{2}$

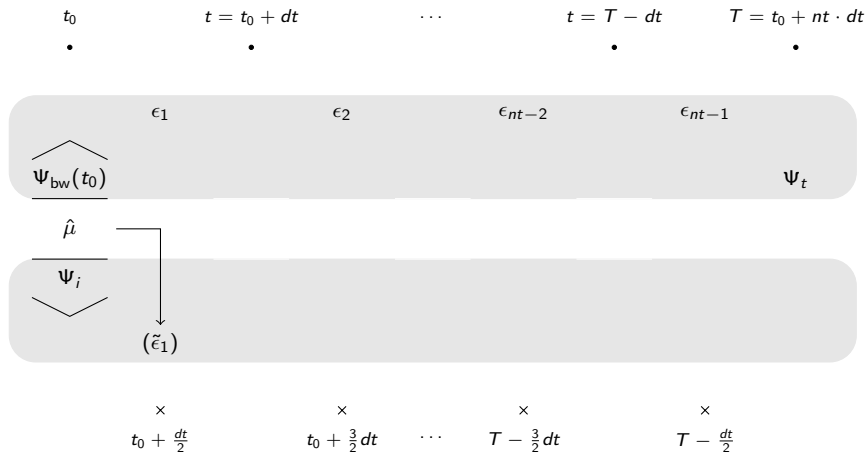
\times
 $t_0 + \frac{3}{2}dt$

...

\times
 $T - \frac{3}{2}dt$

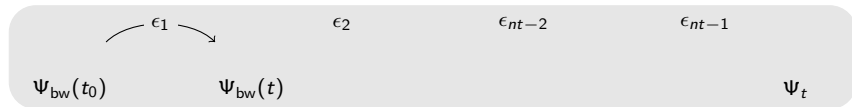
\times
 $T - \frac{dt}{2}$

OCT without Storage



OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •



\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_2

ϵ_{nt-2}

ϵ_{nt-1}

$\Psi_{bw}(t_0)$

$\Psi_{bw}(t)$

Ψ_t

Ψ_i

$\Psi_{fw}(t)$

$\tilde{\epsilon}_1$

\times
 $t_0 + \frac{dt}{2}$

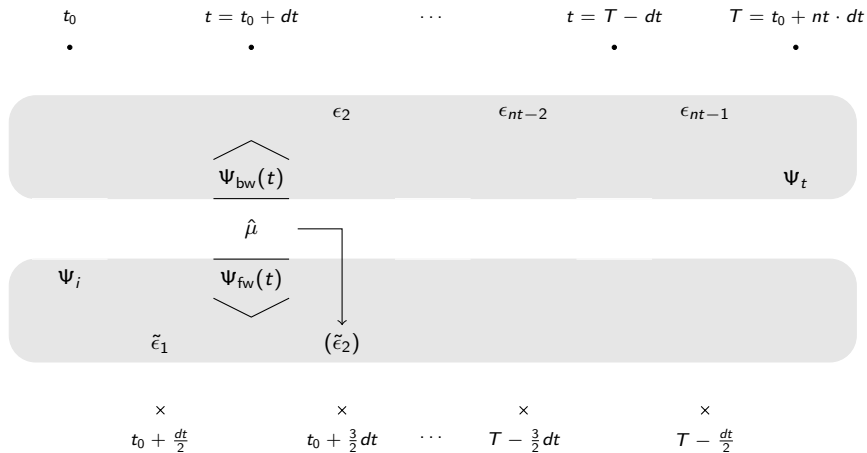
\times
 $t_0 + \frac{3}{2}dt$

...

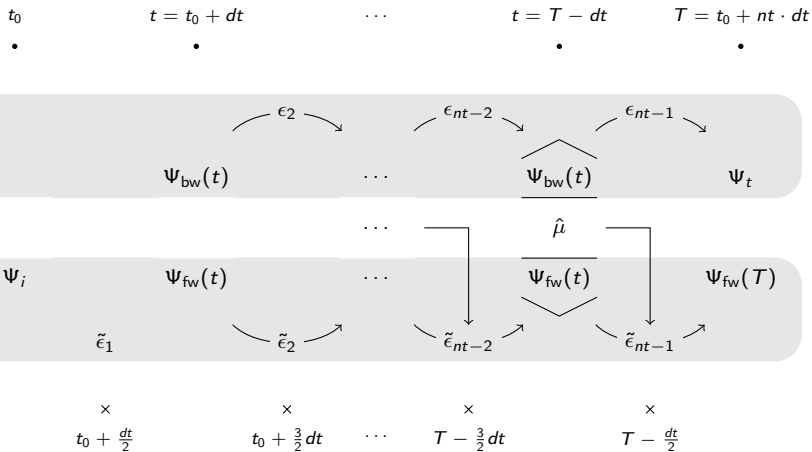
\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT without Storage



OCT without Storage



OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$

• • • •

Ψ_t

Ψ_i

$\Psi_{\text{fw}}(T)$

$\tilde{\epsilon}_1$

$\tilde{\epsilon}_2$

$\tilde{\epsilon}_{nt-2}$

$\tilde{\epsilon}_{nt-1}$

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT without Storage

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

Ψ_t

τ

Ψ_i

$\Psi_{fw}(T)$

$\tilde{\epsilon}_1$

$\tilde{\epsilon}_2$

$\tilde{\epsilon}_{nt-2}$

$\tilde{\epsilon}_{nt-1}$

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

...

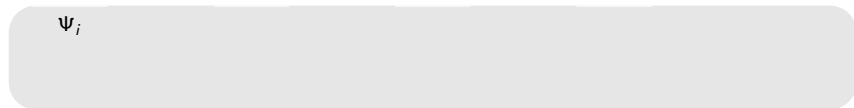
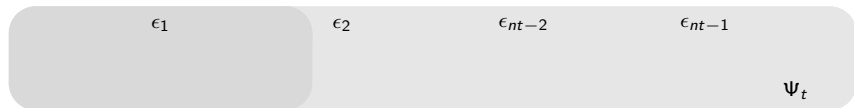
\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$

OCT with Segmented Storage of Backward-Propagated States

OCT with Segmentation

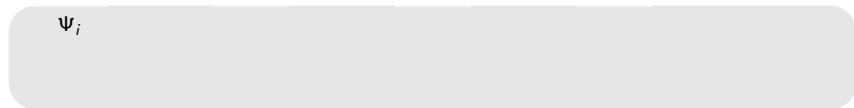
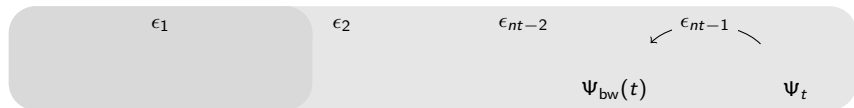
t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •



\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

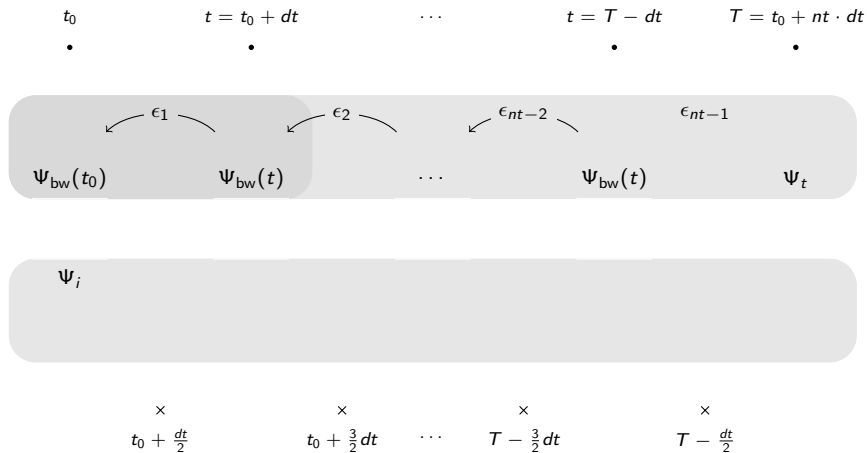
OCT with Segmentation

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

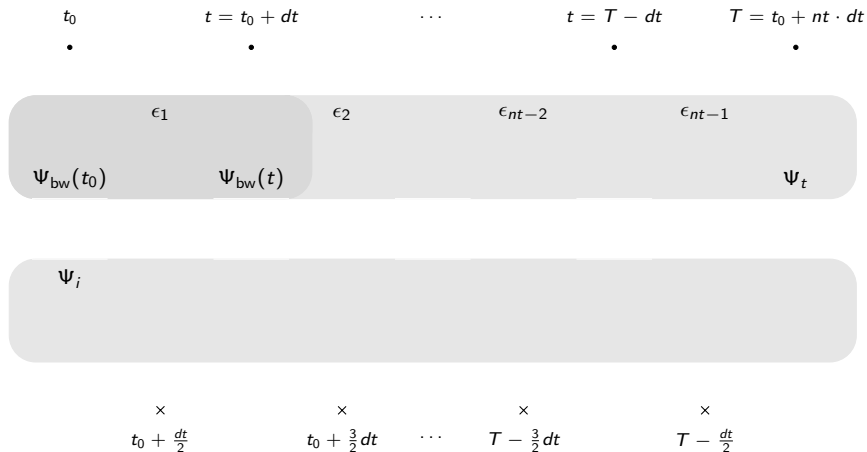


\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

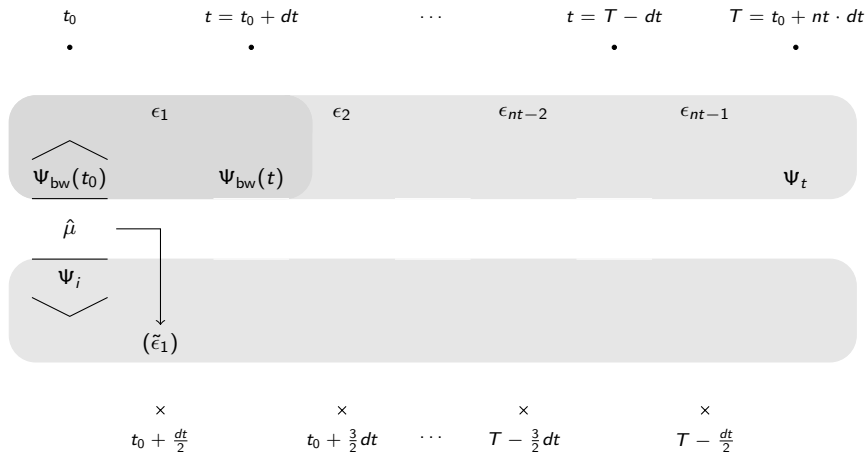
OCT with Segmentation



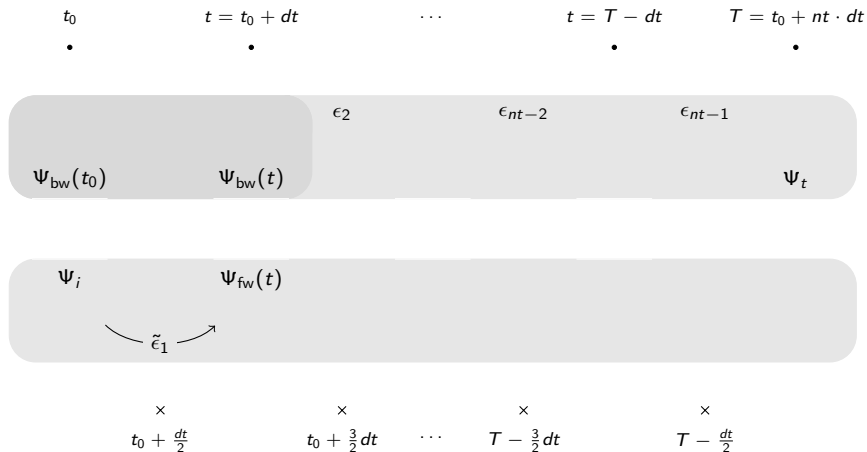
OCT with Segmentation



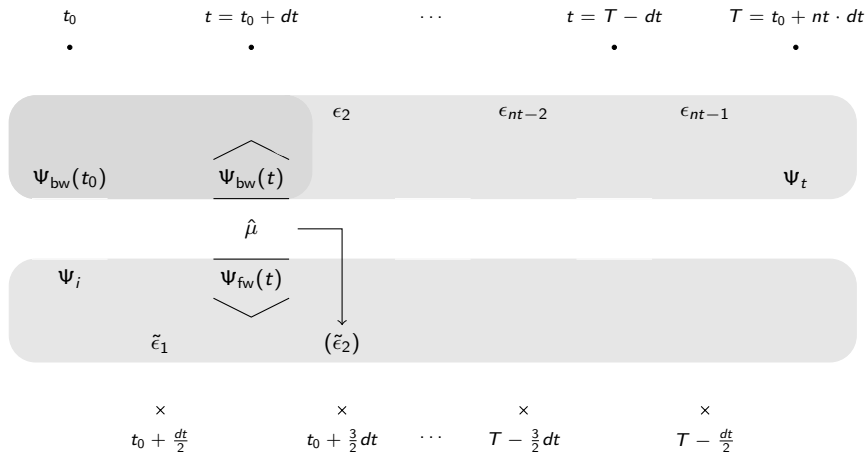
OCT with Segmentation



OCT with Segmentation



OCT with Segmentation



OCT with Segmentation

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •

ϵ_2

ϵ_{nt-2} ϵ_{nt-1}

$\Psi_{bw}(t)$

$\Psi_{bw}(t)$

$\Psi_{bw}(t)$

Ψ_t

Ψ_i

$\Psi_{fw}(t)$

$\tilde{\epsilon}_1$

$(\tilde{\epsilon}_2)$

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2} dt$

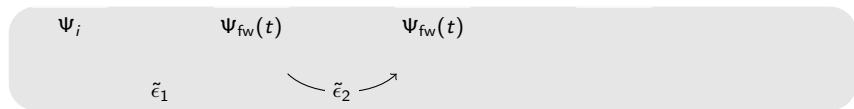
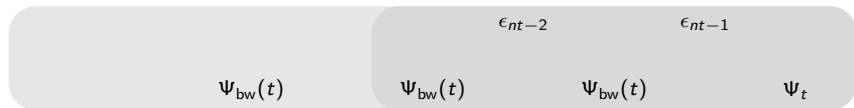
...

\times
 $T - \frac{3}{2} dt$

\times
 $T - \frac{dt}{2}$

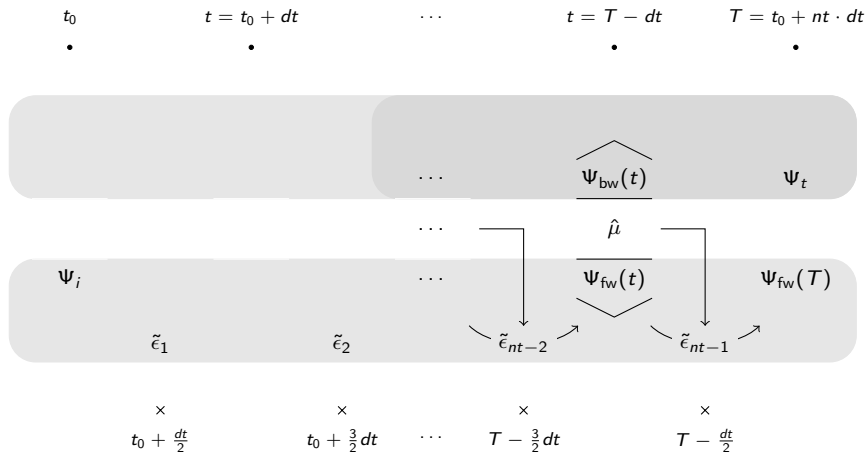
OCT with Segmentation

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$
• • • •



\times \times \times \times
 $t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

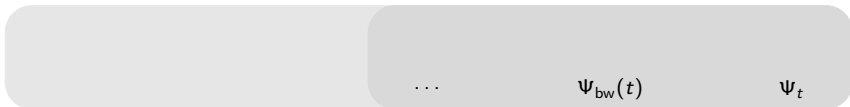
OCT with Segmentation



OCT with Segmentation

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$

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× × × ×

$t_0 + \frac{dt}{2}$ $t_0 + \frac{3}{2}dt$... $T - \frac{3}{2}dt$ $T - \frac{dt}{2}$

OCT with Segmentation

t_0 $t = t_0 + dt$... $t = T - dt$ $T = t_0 + nt \cdot dt$

• • • •

Ψ_t

τ

Ψ_i

$\Psi_{fw}(T)$

$\tilde{\epsilon}_1$

$\tilde{\epsilon}_2$

$\tilde{\epsilon}_{nt-2}$

$\tilde{\epsilon}_{nt-1}$

\times
 $t_0 + \frac{dt}{2}$

\times
 $t_0 + \frac{3}{2}dt$

...

\times
 $T - \frac{3}{2}dt$

\times
 $T - \frac{dt}{2}$