

1 first section

$$\begin{aligned} \sqrt{E(t)} \leq e^{-\varkappa(t-t_0)} \sqrt{E(t_0)} + \varkappa^2 \int_{t_0}^t e^{-\varkappa(t-s)} \|u_h(s)\|_{H^m} ds \\ + \int_{t_0}^t e^{-\varkappa(t-s)} e^{-\varkappa s} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} ds \end{aligned} \quad (1.1)$$

This equation links to equation 2.1, as well as to equation 2.2.

$$\begin{aligned} \sqrt{E(t)} \leq e^{-\varkappa t} \sqrt{E(0)} + \varkappa^2 \int_0^t e^{-\varkappa(t-s)} \alpha \beta ds + \int_0^t e^{-\varkappa(t-s)} e^{-\varkappa s} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} ds \\ \leq e^{-\varkappa t} \sqrt{E(0)} + \varkappa (1 - e^{-\varkappa t}) \alpha \beta + t e^{-\varkappa t} \sup_{[0,t]} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} . \end{aligned} \quad (1.2)$$

This links to 1.1.

2 another

$$e^{\varkappa t} \sqrt{E(t)} \leq \sqrt{E(0)} + \varkappa (e^{\varkappa t} - 1) \alpha \beta + t \sup_{[0,t]} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} . \quad (2.1)$$

Link to another equation 2.2, in section 1.

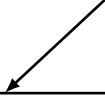
$$E(t) \leq E(0) \quad (2.2)$$

Equation 1.1 -> Equation 2.1, Equation 1.1 -> Equation 2.2, Equation 1.2 -> Equation 1.1, Equation 2.1 -> Equation 2.2, Equation 2.1 -> Section 1,

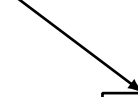
$$\begin{aligned}
\sqrt{E(t)} &\leq e^{-\varkappa t} \sqrt{E(0)} + \varkappa^2 \int_0^t e^{-\varkappa(t-s)} \alpha \beta ds + \int_0^t e^{-\varkappa(t-s)} e^{-\varkappa s} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} ds \\
&\leq e^{-\varkappa t} \sqrt{E(0)} + \varkappa (1 - e^{-\varkappa t}) \alpha \beta + t e^{-\varkappa t} \sup_{[0, t]} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m}.
\end{aligned}$$



$$\begin{aligned}
\sqrt{E(t)} &\leq e^{-\varkappa(t-t_0)} \sqrt{E(t_0)} + \varkappa^2 \int_{t_0}^t e^{-\varkappa(t-s)} \|u_h(s)\|_{H^m} ds \\
&\quad + \int_{t_0}^t e^{-\varkappa(t-s)} e^{-\varkappa s} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m} ds.
\end{aligned}$$



$$e^{\varkappa t} \sqrt{E(t)} \leq \sqrt{E(0)} + \varkappa (e^{\varkappa t} - 1) \alpha \beta + t \sup_{[0, t]} \left\| a(s, \cdot) (1 + u(s))^3 \right\|_{H^m}.$$



$$E(t) \leq E(0)$$

