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List of Symbols

N	Space dimension
\mathbb{N}^*	The set of natural numbers without 0
\mathbb{R}	The set of real numbers
\mathbb{R}^N	N -dimension real set
$\text{supp } f$	Support of function f
$\mathcal{D}(\Omega)$	Space of distributions on Ω
$\mathcal{D}'(\Omega)$	Dual of $\mathcal{D}(\Omega)$
$L^p(\Omega)$	$\{y : \Omega \rightarrow \mathbb{R}; y \text{ measurable, } (\int_{\Omega} y(x) ^p dx)^{1/p} < \infty\}, p \in [1, \infty)\}$
$L^\infty(\Omega)$	$\{y : \Omega \rightarrow \mathbb{R}; y \text{ measurable, } \exists C > 0 \text{ such that } y(x) \leq \text{ess sup}_{x \in \Omega} y(x) \}$
$L^p(0, T; X)$	$\{y : (0, T) \rightarrow X; y \text{ measurable, } \ y(t)\ _X^p \text{ is Lebesgue integrable over } (0, T)\}, p \in [1, \infty)\}$
$L^\infty(0, T; X)$	$\{y : (0, T) \rightarrow X; y \text{ measurable, } \text{ess sup}_{t \in (0, T)} \ y(t)\ < \infty\}$
$W^{1,2}(\Omega), W^{2,2}(\Omega), H^1(\Omega), H_0^1(\Omega), H^2(\Omega)$	Sobolev spaces
$W^{k,p}([0, T]; X)$	
$\ \cdot \ , (\cdot, \cdot)$	$\left\{ y \in \mathcal{D}'(0, T; X); \frac{d^j y}{dt^j} \in L^p(0, T; X), j = 0, \dots, k \right\}, p = 1, 2, \dots$
\rightarrow	Norm and scalar product on $L^2(\Omega)$
\rightarrow	Strong convergence
\rightharpoonup	Weak convergence

$\overset{w*}{\rightarrow}$	Weak-star convergence
∇u	$\left(\frac{\partial u}{\partial x_1}, \frac{\partial u}{\partial x_2}, \dots, \frac{\partial u}{\partial x_N} \right)$ gradient of the scalar function $u(x_1, \dots, x_N)$
Δy	$\sum_{i=1}^N \frac{\partial^2 y}{\partial x_i^2}$ Laplacian of $y(x_1, \dots, x_N)$
$\nabla \cdot a$	$\sum_{i=1}^N \frac{\partial a_i}{\partial x_i}$ the divergence of the vector $a = (a_1, \dots, a_N)$
$C(\Omega)$	The space of all continuous real valued functions on Ω
$C^k(\Omega)$	The space of all continuously differentiable functions on Ω of order $m \leq k$
$C_0^\infty(\Omega)$	The space of indefinitely differentiable functions with compact support in Ω
$BV([0, T]; X)$	The space of bounded variation functions from $[0, T]$ to X

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