D

List of Notations

Notation	Description	First occurrence
$I = [0, T]$	time interval	2.3
$\mathcal{G} \in \mathbb{R}^d$, $\mathcal{G}_h \in \mathbb{R}^d$	continuous and discrete computational domain	2.3
ρ_h	discrete (scalar) variable corresponding to ρ	2.3
τ	element of a triangulation	2.3
h	mesh size parameter, also used as discrete subscript	2.4
η, η_τ	(local) refinement criterion	2.3
θ_{ref}, θ_{crs}	refinement/coarsening tolerance	2.4
$\mathcal{T}$	a triangulation	2.4
$\mathcal{T}_1 \prec \mathcal{T}_2$	hierarchically refined triangulations	3.1.7
ϑ	inner angle of triangulation	3.1
v_i	vertex of a triangulation	3.3
τ^{3D}	element/tetrahedron in 3D triangulation	3.4
(λ, ϕ, r)	spherical coordinates	3.5
∂_x, ∂_t	first order partial differential operators	4.2.1
Δ	Lalpace's operator	4.2.2
$\mathcal{L}$, $\mathcal{E}$, $\mathcal{R}$	Load balancing, edge cut, and re-partitioning cost	B
$G(V, E)$	graph with vertex set V and edges E	5.1
Δx, Δt	spatial and time step	3.5, 4.2.1
$\cdot\|_x$, $\cdot\|_y$	x- and y-component of $(\cdot)$	6.1.1
b, b_i	usually a basis function	6.1.3
$\mathcal{V}$, $\mathcal{V}_h$	continuous and discrete function space	6.1.3
ε, $[\varepsilon]$	true error and error estimate	2.4, 2.6.3
δ_{ij}	Dirac delta function	6.1.3
$\mathcal{D}$, $\mathcal{D}^*$	abstract differential operator, and adjoint	6.1.3, 8.2
φ	radial basis function	6.1.4

Notation continued:

Notation	Description	First occurence
$\breve{\mathbf{x}}$	trajectory or particle path	A
$V(t)$, V	material volume, control volume	A, 7.2.2
$\frac{d}{dt}$	material derivative	A
$\mathbf{n}$	outward unit normal	A.0.1
σ_{surf}	surface stress tensor	7.1.2
$\mathcal{F}$	force term	7.1.2
Ω	angular velocity	C
$\mathbf{v}$	velocity (vector)	C
Φ	geopotential height	C
f_C	Coriolis parameter	C
∇_s, Δ_s	tangential gradient/divergence, and Laplacian	C, 8.3.1

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