Notation and list of symbols

As a rule, each notation is explained where it first appears. Nevertheless, we collect here (see below) some of the notations used frequently in the text. The symbols $\mathbb{N}$, $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$ and $\mathbb{C}$ stand for the basic sets (positive integers, integers, rationals, real and complex numbers respectively). Vectors are boldfaced, so typically we note $\boldsymbol{z}^* = (x, y) \in \mathbb{R}^2$ and an asterisk superscripting a vector or a matrix denotes its transpose. Holomorphic functions that are real valued for real arguments will be called "real analytic". Equations and formulas in chapters are numbered in the following way: the leftmost digit corresponds to the chapter, the second correspond to the section and the rightmost one is the number the formula makes up in this section. So, for example, label (3.5.4) denotes the fourth formula of the fifth section in the third chapter. Statements of theorems, propositions, lemmas and definitions are slanted. This is not the case neither for examples nor for remarks, so the symbols ($\diamond$) and ($\spadesuit$) are used as endpoints of the former and of the latter respectively. Similarly, the end of proofs (of theorems, propositions, lemmas...) are marked by a square ($\square$). In the following list of symbols, we do not include those with highly specific and long definitions as, for instance (see appendix 3.2.40), those of the norms $|\cdot|_\rho$, $|\cdot|_{\rho,R}$,... and so on.

List of symbols

$(\alpha)_k$	the generalized factorial (Pochhamer symbol): $(\alpha)_k = \alpha(\alpha+1)\cdots(\alpha+k-1)$, $(\alpha)_0 = 1$
$[m, n]$	(m, n integers; $m \geq 0$, $n > 0$) the remainder of the integer division of m by n
$\overline{\boldsymbol{z}}$	for $\boldsymbol{z} \in \mathbb{C}$, its complex conjugate
$\cdot$	between real numbers, their ordinary product $(3 \cdot 2 = 6)$
$\dot{x}$	differentiation with respect to time: $\dot{x} = \frac{dx}{dt}$
$\langle \boldsymbol{u}, \boldsymbol{v} \rangle$	the standard inner product of two vectors, so $\langle \boldsymbol{u}, \boldsymbol{v} \rangle = \sum_{j=1}^n u_j v_j$ for $\boldsymbol{u}, \boldsymbol{v} \in \mathbb{R}^n$
e	appearing in formulas: the base of the natural logarithm, i. e., $\mathrm{e} = \exp(1)$. In the text both notations e and $\exp(1)$ are used indistinctly
i	the imaginary unit: $\mathrm{i} = \sqrt{-1}$
meas	Lebesgue measure
$\lfloor x \rfloor$	the integral part of $x \in \mathbb{R}$
$\mathbb{T}^n$	the standard n torus: $\mathbb{T}^n = S^n = (\mathbb{R}/2\pi\mathbb{Z})^n$

$\times$	between sets, the set (Cartesian) product; between real numbers, their ordinary product ($3 \times 2 = 6$)
$\mathbb{Z}_+$	the non-negative integers, i. e.: $\mathbb{Z}_+ = \mathbb{N} \cup \{0\}$
$\{f, g\}$	Poisson bracket of the functions f and g
A^*	if A is a $n \times m$ matrix, A^* denotes its transposed
I_n	the identity $n \times n$ matrix
J_n	the matrix of the standard symplectic form, i. e.: $J_n = \left(\begin{smallmatrix} 0 & I_n \\ -I_n & 0 \end{smallmatrix}\right)$
$L_g f$	$L_g f = \{f, g\}$
W_0	The *principal branch* of the Lambert W function. See page 75