Notation

General

		Subscript		
Quantity	**Notation**	Left	Right	**Example**
Scalar	lowercase	n/a	n/a	$a = 4$
Vector	lowercase, bold	frame	from $\rightarrow$ to	${}_{\mathcal{A}}\boldsymbol{r}_{AB}$
Homogeneous vector	lowercase, bold, tilde	frame	from $\rightarrow$ to	${}_{\mathcal{A}}\tilde{\boldsymbol{r}}_{AB}$
Matrix	uppercase, bold	n/a	n/a	$\boldsymbol{A}$
Transformation matrix[1]	uppercase, bold	n/a	to $\leftarrow$ from	$\boldsymbol{R}_{BA}$

[1] This includes passive rotations, homogeneous transformations, quaternions

$f(\boldsymbol{x}; \boldsymbol{p})$ a quantity f with variables $\boldsymbol{x}$ and (optionally) parameterized by parameters $\boldsymbol{p}$.

Probability

Property	**Notation**
Random variable (RV), state	X, x
Probability	$P(X = x) =: P(X)$
Conditional probability	$P(X = x \vert Y = y) =: P(X \vert Y)$
Expectation of a continuous RV	$E[X] =: \mu$
Expectation of a discrete RV	$E[X] =: \mu$
Expectation (continuous RV) of a function g	$E_{x \sim f(x)}[g(x)] = \int_{-\infty}^{\infty} g(x) f(x) dx$
Expectation (discrete RV) of a function g	$E_{x \sim p(x)}[g(x)] = \sum_i g(x_i) p(x_i)$
Variance	$\mathrm{Var}[X] =: \sigma^2$
Standard deviation	$\mathrm{SD}[X] =: \sigma$
Probability mass function[1]	$p_X(x) =: p(x)$
Probability density function[2]	$f_X(x) =: f(x)$
Cumulative distribution function	$F_X(x) =: F(x)$

[1] for discrete RVs [2] for continuous RVs