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Finsler manifold

Definition. Finsler manifold

Definition 2.2.9. A *continuously varying norm* on a differentiable manifold M is a continuous function from TM to $[0, \infty)$ usually denoted by $\|\cdot\|$

$$\|\cdot\| : TM \to [0, \infty), \quad X \in TM \mapsto \|X\|,$$

with the property that for all $p \in M$ the restriction of $\|\cdot\|$ to T_pM is a symmetric norm, i.e.,

1. $\|\lambda X\| = |\lambda| \|X\|$, $\forall X \in TM$, $\forall \lambda \in \mathbb{R}$;
2. $\|X + Y\| \leq \|X\| + \|Y\|$, $\forall p \in M$ and $\forall X, Y \in T_pM$;
3. $\|X\| = 0 \Rightarrow X = 0$.

Definition 2.2.10. In this text, we say that a *Finsler manifold* is a pair $(M, \|\cdot\|)$ where M is a differentiable manifold and $\|\cdot\|$ is a continuously varying norm on M, in the sense of Definition 2.2.9. In this case, the function $\|\cdot\|$ is also called *Finsler structure*.

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        - Finsler manifold

And it has 20 siblings.

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        - Hermitian manifolds
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        - smooth $\mathbb{R}$-manifold
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        - Manifold with a flow
        - $\mathbb{R}$-manifold group (Lie groups)
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        - Sub-Riemannian manifolds
        - $\mathbb{R}$-manifold Poisson
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        - $\mathbb{R}$-manifold topological
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