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Title: Lifting absolutely continuous curves from $\mathbb{P}(\mathbb{T}^d)$ to $\mathbb{P}_2(\mathbb{R}^d)$.

Abstract: Recall that the rotation vector of an absolutely continuous curve $x : [0, \infty) \rightarrow \mathbb{T}^d$ when it exists, is the asymptotic limit of $\hat{x}(t)/t$, where $\hat{x}$ is any lift of $x$ to the universal cover $\mathbb{R}^d$: One of the main differences with an absolutely continuous curve $x : [0, \infty) \rightarrow \mathbb{P}(\mathbb{T}^d)$, which constitutes an analytical challenge, is the non-uniqueness of a velocity field associated to $x$. Given $c \in \mathbb{R}^d$, we identified a unique velocity $v_c$ satisfying a certain variational principle and derived existence of a lift of $(x, v_c)$ to obtain an absolutely continuous curve $\hat{x} : [0, \infty) \rightarrow \mathbb{P}(\mathbb{R}^d)$. This has been central for extending the Mather/Mane theory to $\mathbb{P}(\mathbb{T}^d)$ and make inferences about the asymptotic behavior of classes of partial differential equations.