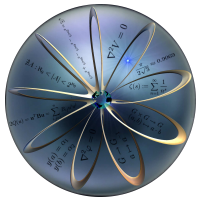

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vector field along a curve

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Let M be a differentiable manifold and $\gamma : [a, b] \to M$ be a differentiable curve in M. Then a vector field along γ is a differentiable map $\Gamma : [a, b] \to TM$, the tangent bundle of M, which projects to γ under the natural projection $\pi : TM \to M$. That is, it assigns to each point $t_0 \in [a, b]$ a vector tangent to M at the point $\gamma(t)$, in a continuous manner. A good example of a vector field along a curve is the speed vector $\dot{\gamma}$. This is the push-forward of the constant vector field $\frac{d}{dt}$ by γ, i.e., at t_0, it is the derivation $\dot{\gamma}(f) = \frac{d}{dt}(f \circ \gamma)|_{t=t_0}$.