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Cotangent space on a smooth manifold T_p^*M

Definition. Cotangent space on a smooth manifold T_p^*M

identifications

- as an ideal in $\mathcal{C}^\infty(M)$
 - $\text{ev}_p : \mathcal{C}^\infty(M) \rightarrow \mathbb{R}$
is a linear map, say whose kernel is $\mathfrak{m}_p$. It is maximal.
 - $T_pM \cong (\mathfrak{m}_p^2/\mathfrak{m}_p)^*$
 $v \mapsto (f \mapsto v(f - f(q)))$

	ω_p	T_p^*M	T^*M	ω	ΓT^*M	Ω_M^1
	$\omega_p(-) : T_pM$			$\omega_{(-)} : M \rightarrow$		
sections of dual bundle is dual of the sections				$\omega(-) : \Gamma TM$	$\Gamma T^*M \cong \text{Ho}$	
use identification that vector fields are derivations?		$\mathfrak{m}_p^2/\mathfrak{m}_p?$			$\text{Der}(\mathcal{C}^\infty(M))$	
$d : \mathcal{C}^\infty(M) \rightarrow$						

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 - [manifolds](#)
 - [smooth \$\mathbb{R}\$ -manifold](#)
 - [Tangents on a smooth manifold](#)
 - [Cotangent space on a smooth manifold \$T_p^*M\$](#)
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 - [smooth \$\mathbb{R}\$ -manifold](#)
 - [Tangents on a smooth manifold](#)
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 - [Connection on the tangent bundle of a smooth manifold](#)
 - [Differential forms on smooth manifolds](#)
 - [Tangent space of a smooth manifold](#)