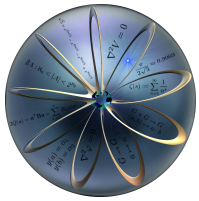

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rectification theorem

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Let U be an open subset of $\mathbb{R}^n$ and let $f \in C^1(U)$ be a continuous differentiable vector field

$$f\colon U \to \mathbb{R}^n.$$

If there exists $x_0 \in U$ such that $f(x_0) \neq 0$ then there exists $U_0 \subset U$ an open neighborhood of x_0 such that there exists a diffeomorphism of class C^1

$$F\colon U_0 \to V$$

where V is an open subset of $\mathbb{R}^n$ such that

$$[DF(x)]f(x) = e_1$$

for all $x \in U_0$ where $[DF(x)]$ is the Jacobian of the diffeomorphism F evaluated at x and $e_1 = (1, 0, \ldots, 0)$ is the first vector of the canonical basis of $\mathbb{R}^n$. More generally if the vector field f is of class C^r then so is the diffeomorphism F. [**?**]

References

[AVI] Arnold, V.I.: Ordinary Differential Equations *(translated by R.A. Silverman)*. The MIT Press, Cambridge, 1973.