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Criteria of completeness of vector fields in euclidian space

It seems evident that a problem of completeness of non-singular vector field in euclidian space can be solved without finding an explicit form of exact solution of corresponding dynamical system.

It becomes clear after some sufficient criteria of completeness were formulated. For example, any continuous vector field on a compact manifold is complete. Or La Sall criteria based on a given function in euclidian space with special character of behaviour which guarantee the completeness of vector field (of course there is no definite algorithm to construct such a function for any given vector field).

But no necessary and sufficient conditions of completeness were obtained so far. In this work such a criteria is formulated and proved.