Criteria for right-left equivalence of smooth map-germs

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Abstract

We propose a simple systematic method for giving affirmative answers to the recognition problem on $C^r$ right-left equivalence of given two $C^\infty$ map-germs by constructing germs of $C^r$ diffeomorphisms directly from a given $C^r K$-equivalence ($1 \leq r \leq \infty$). By using this method, we shall give several sufficient conditions for $C^r$ right-left equivalence of given two $C^\infty$ map-germs. One of our main results yields a $C^r$ generalization of Mather’s classification theorem. In the case that $r = \infty$, our conditions characterize $C^\infty$ right-left equivalence of given two $C^\infty$ map-germs completely. Thus, we may answer the $C^\infty$ recognition problem completely by using our conditions in principle.

Since several mathematicians require a significant example of our method in use, I will give also some examples which clarify the advantages of our method over the earlier ones.