

Pacific Journal of Mathematics

CORRECTION TO: “ONE-DIMENSIONAL NASH GROUPS”

JAMES JOSEPH MADDEN

ERRATA CORRECTION TO ONE-DIMENSIONAL NASH GROUPS

JAMES J. MADDEN
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The discussion of Nash mappings on pages 333–334 contains some errors and the remark on page 334 is misleading and ought to be ignored. Fortunately, the main theorems of the paper are not affected.

Here are the problems: the definition of *locally Nash mapping* on page 333 is no good. The lemma on page 333 is incorrect if interpreted with the definitions given in the paper (but is valid if the definition given below is used). In particular, the sentence on page 334, line 11, which begins “The lemma...” and the two sentences following it are false: a locally Nash map (defined properly) need not be Nash.

The following definitions should be used: Let $(M, \{\psi_i\})$ and $(N, \{\phi_j\})$ be Nash manifolds. A continuous map $F: M \rightarrow N$ is called a *Nash map* if for all i and j

$$\phi_j \circ F \circ \psi_i^{-1}: \psi_i(F^{-1}(N_j) \cap M_i) \rightarrow \phi_j(N_j)$$

is a Nash function. (Here, of course, M_i and N_j are the domains of ψ_i and ϕ_j . Note that this condition concerns finitely many maps.) Maps of locally Nash manifolds are defined differently. Let $(M, \{\psi_i\})$ and $(N, \{\phi_j\})$ be locally Nash manifolds. A continuous map $F: M \rightarrow N$ is called a *locally Nash map* if for every $x \in M$ and every codomain chart ϕ_j , there is a compatible chart ψ_0 defined on a neighborhood of x satisfying the condition that $\phi_j \circ F \circ \psi_0^{-1}$ is Nash. Example: The locally Nash group map $(\mathbf{R}, +, \text{id}) \rightarrow (\mathbf{R}, +, \text{id})/\mathbf{Z}$ is not Nash, because the inverse image of a point is an infinite discrete set. (This is typical of the way in which a locally Nash map may fail to be Nash.)

One may consider two kinds of equivalence between Nash manifolds—existence of a Nash map with a Nash inverse or existence of a locally Nash map with locally Nash inverse. Theorem 2 must be understood to refer to the second type. For compact Nash manifolds, it is easy to see that the two types of equivalence are the same, so no problem arises in connection with the main result on page 341. The arguments in the main body of the paper are valid under the correct definitions.

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