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A Manifold Structure for the Group of Orbifold Diffeomorphisms of a Smooth Orbifold

For a compact, smooth C^r orbifold (without boundary), we show that the topological structure of the orbifold diffeomorphism group is a Banach manifold for $1 \leq r < \infty$ and a Fréchet manifold if $r = \infty$. In each case, the local model is the separable Banach (Fréchet) space of C^r , respectively, C^∞ orbisections of the tangent orbibundle.

Keywords: Orbifolds, diffeomorphism groups, topological transformation groups, homeomorphism groups.

MSC: 57S05, 22F50, 54H99; 22E65