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Title: Exotic 4-manifolds with infinite dihedral fundamental group

Abstract: We construct infinite families of exotic 4-manifolds with infinite dihedral fundamental group. This group is the non-trivial semi-direct product of $\mathbb{Z}$ and $\mathbb{Z}_2$, or equivalently the free product of $\mathbb{Z}_2$ and $\mathbb{Z}_2$.

The key idea of the construction is to assemble simply-connected building blocks to construct the universal cover, and then to perform surgeries in an equivariant way.

The diffeomorphism types of these exotic manifolds are distinguished by the Seiberg-Witten invariants of their double covers, while to show that their homeomorphism type is the same we use a recent result of Hillman-Kasprowski-Powell-Ray.