Special Colloquium

UCR
Mathematics
Department

DR. NATHAN PERLMUTTER

STANFORD

"MODULI SPACES OF MANIFOLDS"

Let M be a smooth manifold, let Diff(M) denote the topological group of diffeomor-phisms $M \to M$, and let BDiff(M) denote the *classifying space*. For any paracompact space X, there is a one-one correspondence between the set of homotopy classes [X; BDiff(M)] and the set, $\mathrm{Bun}_M(X)$, of isomorphism classes of fibre bundles $E \to X$ with fibre M. The classifying space of BDiff(M) is reffered to as the *moduli space of manifolds of type M*. The study of the homotopy type of these spaces occupies a central place in smooth topology.

In this talk I will discuss some contemporary approaches to studying the homotopy type of Bdiff(M), for varying M. In particular I will discuss the work of Madsen and Weiss identifying the homological type of the moduli spaces of Riemann surfaces and the results of Galatuius and Randal-Williams on the moduli spaces of manifolds of dimension $2n$, I will then present recent work of mine pertaining to the moduli spaces of odd dimensional manifolds, and manifolds with boundary, and will discuss connections to cobordism categories and surgery theory.

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Surge 284

Talk Begins @ 4:10 p.m.

Ends @ 5:00 p.m.

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