



THE WORLDWIDE CENTER OF MATHEMATICS

Transgression to loop space and fusion



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Coffee, tea, cookies: 3:30pm

Talk: 4-5pm

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Abstract: In the theory of loop spaces, an important question is how to characterize those geometric objects (say, functions and line bundles) on the loop space of a manifold which are related via transgression to objects one topological degree higher (say, line bundles and gerbes respectively) on the manifold itself. The property of “fusion”, first introduced by Stolz and Teichner and further developed by Waldorf, plays a key role.

I will discuss two joint results with Richard Melrose in this direction. The first is a characterization of the objects mentioned above in terms of fusion, $\text{Diff}^+(S^1)$ equivariance and a strong smoothness condition, which leads to a classification of “loop-spin” structures associated to a string manifold. The second is a refinement of Čech cohomology for the continuous loop space, utilizing fusion and a second “figure-of-eight” condition, through which transgression factors as an isomorphism.
