

BOSTON UNIVERSITY GEOMETRY AND PHYSICS SEMINAR

STRING MANIFOLDS AND SPIN STRUCTURES ON LOOP SPACES

Chris Kottke
Brown

Mar 20, 2013, 4:00 – 5:00pm
Math/Computer Science, Room148
111 Cummington Street, Boston

Tea: 3:45pm in Room MCS 144

Abstract: A string structure on a spin manifold is a lifting of its structure group from $\text{Spin}(n)$ to $\text{String}(n)$, the (infinite dimensional) 3-connected group in the Whitehead tower of $O(n)$, after $SO(n)$ and $\text{Spin}(n)$. For a simply connected manifold M , string structures on M are known by a result of McLaughlin to be in bijection with ‘spin structures’ on the free loop space LM , i.e. liftings of the structure group of LM from $L\text{Spin}$ to its universal central extension by $U(1)$. I will present a recent result with R. Melrose on the non-simply connected case. We show that string structures on M are in bijection with spin structures on LM which are additionally equivariant with respect to oriented diffeomorphisms (and more general reparametrizations) of loops, smooth in an extremely strong sense, and satisfy a ‘fusion’ condition originally introduced by Stolz and Teichner in the setting of loop space orientations and further developed by Waldorf in the present setting.

See <http://math.bu.edu/research/geom/seminar.html> or contact Si Li sili@math.bu.edu for more information.