

1137-57-245

Uwe Kaiser* (ukaiser@boisestate.edu), Department of Mathematics, Boise State University, 1910 University Drive, Boise, ID 83725. *Spaces of Immersions of Circles in 3-manifolds and Skein Theory*. Preliminary report.

We study the spaces of immersions of unions of circles in oriented 3-manifolds. Using transversality we define a 2-groupoid *deforming* the fundamental 2-groupoid, and study presentations of it. We also define graded and bordism versions of the groupoid. A general algebraic framework for linearization and *representation* of 2-groupoids is related to completions of Conway-type skein modules of oriented and singular links. We also describe how Jones-type skein modules can be described using local systems on the mapping spaces. Finally we define certain lifts and extensions of Chas-Sullivan's string topology operations and corresponding relations for presentations of the completed skein modules. If time permits we speculate on higher categorical structures derived from the mapping spaces using transversality. (Received February 05, 2018)