In this article the authors propose a new mathematical framework for the study of topological defects in Chern-Simons theory. This work may be considered as an extension of earlier study on topological defects in *abelian* Chern-Simons theory [1] to *non-abelian* theories by use of recent results on the so-called Lagrangian correspondence and topological defects [2]. The correspondence is shown in terms of Weinstein's symplectic categories [3] which arise from geometric quantization of symplectic manifolds. The proposed framework provides an algebraically novel description of non-invertibility in the topological defects.

The authors argue that the topological defects in non-compact and non-abelian Chern-Siomons theory can be obtained by solving a modified classical Yang-Baxter equation and show that fusion rules of these defects realize a semigroup structure with non-invertible elements. The authors also discuss possible applications to 3-dimensional gravity and higer-spin theories.

References

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