Branes and quantization

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Abstract

The problem of quantizing a symplectic manifold $(M, \omega)$ can be formulated in terms of the $A$-model of a complexification of $M$. This leads to an interesting new perspective on quantization. From this point of view, the Hilbert space obtained by quantization of $(M, \omega)$ is the space of $(B_{cc}, B')$ strings, where $B_{cc}$ and $B'$ are two $A$-branes; $B'$ is an ordinary Lagrangian $A$-brane, and $B_{cc}$ is a space-filling coisotropic $A$-brane. $B'$ is supported on $M$, and the choice of $\omega$ is encoded in the choice of $B_{cc}$. As an example, we describe from this point of view the representations of the group $SL(2, \mathbb{R})$. Another application is to Chern–Simons gauge theory.

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