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Branes and quantization

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Abstract

The problem of quantizing a symplectic manifold (M, ω) 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, ω) is the space of $(\mathcal{B}_{\rm cc}, \mathcal{B}')$ strings, where $\mathcal{B}_{\rm cc}$ and $\mathcal{B}'$ are two A-branes; $\mathcal{B}'$ is an ordinary Lagrangian A-brane, and $\mathcal{B}_{\rm cc}$ is a space-filling coisotropic A-brane. $\mathcal{B}'$ is supported on M, and the choice of ω is encoded in the choice of $\mathcal{B}_{\rm cc}$. 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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