Seminario de Geometría y Topología

Family quantization and K theory of the classifying spaces of Quantomorphism groups

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Abstract: We set up a geometric quantization scheme for general fibrations with structure group the group $Cont_0(N,\alpha)$ of strict contactomorphisms of a closed contact manifold N with a global contact form \alpha, whose Reeb flow defines a free S^1 - action: a prequantization space. Formally this determines a sequence of K-theoretic invariants of such a fibration. As an application we prove that the natural map BU(r) -> BU of classifying spaces factors as BU(r) -> BQ(r) -> BU, where $Q(r) = Cont_0(S^{2r-1}, \alpha_{std})$ for the standard contact form on the odd-dimensional sphere. As a corollary we show that the map on the K-theory, induced by the natural map $BU(r) \to BCont_0(S^{2r-1}, \alpha_{std})$ is surjective, strengthening a theorem of Spacil for rational cohomology.

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