Mathematics > Representation Theory

Character algebras of decorated SL_2(C)-local systems

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Let S be a path-connected, locally-compact CW-complex, and let M be a subcomplex with finitely-many components. A `decorated SL_2(C)-local system' is an SL_2(C)-local system on S, together with a choice of `decoration' at each component of M (a section of the stalk of an associated vector bundle).

We study the (decorated SL_2(C)-)character algebra of (S,M), those functions on the space of decorated SL_2(C)-local systems on (S,M) which are regular with respect to the monodromy. The character algebra is presented explicitly. The character algebra is then shown to correspond to the algebra spanned by collections of oriented curves in S modulo simple graphical rules.

As an intermediate step, we obtain an invariant-theory result of independent interest: a presentation of the algebra of SL_2(C)-invariant functions on End(V)^m + V^n, where V is the tautological representation of SL_2(C).

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