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Generating function of monodromy symplectomorphism, isomonodromic tau-function and its WKB expansion.

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We discuss three closely related problems. First, we consider the $SL(n)$ character variety of the Riemann surface of genus g with n punctures and show how to invert the Goldman Poisson structure on its symplectic leaf in terms of Fock-Goncharov coordinates. A version of this result for the extended character variety proposed by L.Jeffrey in 1994 is presented.

Second, we apply this formalism to study the generating function of the monodromy symplectomorphism for the Fuchsian system on the Riemann sphere. In our framework, the symplectic potential on the (extended) character variety is expressed via Fock-Goncharov coordinates. This generating function can be naturally identified with the Jimbo-Miwa tau-function, which allows to fix the dependence of the tau-function on monodromy data. As a by-product, we obtain a new hamiltonian formulation of Schlesinger system which involves quadratic Poisson brackets with dynamical r-matrix.

Third, we study the WKB expansion of the generating function; these calculations are based on WKB expansion of Fock-Goncharov coordinates in terms of certain Abelian integrals, known as Voros symbols.

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