Virasoro Hamiltonian spaces

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Abstract:

We develop a theory of Hamiltonian actions of the canonical central extension of the group of diffeomorphisms of the circle. It turns out that Virasoro Hamiltonian spaces (this is another name for such Hamiltonian actions) are in bijective correspondence with group valued Hamiltonian spaces with moment map taking values in (a certain part of) the universal cover of the group SL(2, R). Among other things, this correspondence allows to recover the classical result of Lazutkin-Pankratova, Kirillov, Segal, Witten (and others) on classification of coadjoint orbits of the Virasoro algebra. Interesting examples of Virasoro Hamiltonian spaces arise as moduli spaces of conformally compact hyperbolic metrics on oriented surfaces with boundary.

The talk is based on a joint work in progress with Eckhard Meinrenken.