

Holomorphic $\mathfrak{sl}(2, \mathbf{C})$ –differential systems on compact Riemann surfaces and curves in compact quotients of $\mathrm{SL}(2, \mathbf{C})$

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We explain the framework, the motivations and the strategy behind a result that constructs holomorphic $\mathfrak{sl}(2, \mathbf{C})$ –differential systems over some Riemann surfaces Σ_g of genus $g \geq 2$, such that the image of the associated monodromy homomorphism lies in some cocompact Kleinian subgroup $\Gamma \subset \mathrm{SL}(2, \mathbf{C})$. As a consequence, there exist holomorphic maps from Σ_g to the quotient $\mathrm{SL}(2, \mathbf{C})/\Gamma$, that do not factor through any elliptic curve. This answers positively a question asked by Huckleberry and Winkelmann, also raised by Ghys.

The talk is based on a joint work with Indranil Biswas (Shiv Nadar University, New Delhi), Lynn Heller (BIMSA, Beijing) and Sebastian Heller (BIMSA, Beijing).