

Abstract

Let S be a closed, connected topological surface of $g \geq 2$. The Teichmüller space $T(S)$ is the space of hyperbolic structures on S up to isotopy. There is a natural Weil-Petersson symplectic form on $T(S)$. Given a pants decomposition and transverse arcs to pants curves, Fenchel-Nielsen coordinates for $T(S)$ are the $3g-3$ length functions and $3g-3$ twist functions of pants curves. Wolpert showed that these coordinates form a global Darboux coordinate system with respect to the Weil-Petersson symplectic form. Considering the holonomy representations for $T(S)$ into $\mathrm{PSL}(2, \mathbb{R})$, higher Teichmüller space is to study of special component of $R_G = \mathrm{Hom}(\pi_1(S), G)/G$ for higher rank Lie group G . There is a natural Atiyah-Bott-Goldman symplectic structure on R_G . Goldman introduced the generalized twist flows and showed that they are the Hamiltonian flows associated to the generalized lengths. In my joint work with Anna Wienhard and Tengren Zhang, we introduce new flows on the $\mathrm{PGL}(n, \mathbb{R})$ Hitchin component with new phenomena and we found a global Darboux coordinate system on the $\mathrm{PGL}(n, \mathbb{R})$ Hitchin component.