Research Plan

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1. **On a boundary of the Bers fiber space**

   Let G be a torsion free finitely generated Fucshian group of the first kind acting on the upper half plane U. Assume that U/G is a Riemann surface of genus g with n punctures.

   The Teichmüller space $T(G)$ of G is embedded into the complex vector space $B_2(L, G)$ of holomorphic automorphic forms of weight -4 on the lower half plane L with respect to G. We identify the image of $T(G)$ under the embedding with $T(G)$, then the boundary $\partial T(G)$ of $T(G)$ is naturally defined.

   The fiber space $F(G)$ over $T(G)$ whose fiber is a quasidisk is defined. By the embedding as above, we see that $F(G)$ becomes a domain in $B_2(L, G) \times \mathbb{C}$. Now let $\dot{G}$ be another Fuchsian group and $U/\dot{G} \to U/G - \{\text{a point}\}$ be a conformal bijection. Then Bers showed there exists an isomorphism of $F(\dot{G})$ onto $T(G)$. I shall study an action of the isomorphism to a boundary of $F(\dot{G})$.

2. **On holomorphic families of Riemann surfaces**

   Let B be a hyperbolic Riemann surface and suppose a holomorphic family of Riemann surfaces of type (g, n) over B is given, where g is the number of genus of a fiber and n is the number of punctures of the fiber.

   Then we have a holomorphic map from Δ (the universal covering surface of B) to the Teichmüller space of type (g, n).

   If the first research in **1** develops, then I expect to have a correspondence of $\partial\Delta$ and $\partial T_{(g,k)}$. From this, we see a detailed information about holomorphic families.

3. **On holomorphic motions**

   Let E be a closed subset od $\mathbb{C}$. I will try to extend the Mitra's results of holomorphic motions on the Teichmüller space $T(E)$ of E to results of holomorphic motions on $T(R)$ of a Riemann surface R.