THE BERS EMBEDDING OF ONE-DIMENSIONAL TEICHMÜLLER SPACES

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In this poster, we explain how to compute the monodromy representation of a Fuchsian group associated to a given (bounded) projective structure on a marked once-punctured torus or four-times punctured sphere, say X. The calculation can essentially be reduced to solving (numerically) the homogeneous linear ordinary differential equation

$$2y'' + \left\{ \frac{1}{2z^2(z-1)^2} + \frac{1}{2(z-\lambda)^2} + \frac{t + c(\lambda)}{z(z-1)(z-\lambda)} \right\} y = 0,$$

where λ is a point in $\mathbb{C} \setminus \{0, 1\}$ such that X and the domain $Y = \mathbb{C} \setminus \{0, 1, \lambda\}$ are commensurable with respect to coverings, and $c(\lambda)$ is a constant which is often called the accessary parameter of Y. (This method is a modification of that of R. M. Porter and L. Keen developed around 1980.)

Using this, we exhibit pictures of the Bers embedded Teichmüller space of X, and furthermore, pictures of the interior of the discreteness locus in the space of bounded projective structures on X. Note that the component of the iterior of the discreteness locus containing the "origin" is nothing but the (Bers embedded) Teichmüller space of X by a result of H. Shiga. A component of the interior of the discreteness locus other than the Teichmüller space of X is called *exotic*. We will see a mysterious configuration of the exotic components.

We also provide computer graphics of the bending loci corresponding to simple closed curves on X. As applications, numerically, we can calculate the accessary parameter, and we can give the inner (and possibly, outer) radius of the Bers embedding of the Teichmüller space of the surface $\mathbb{C} \setminus \{0, 1, -1\}$. Also, we can give the Maskit coordinate of a given Teichmüller parameter in a numerical way.

Information: You can see related pictures in the following website:
http://www.kusm.kyoto-u.ac.jp/complex/Bers/

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