

Reduction theory for Fuchsian groups with cusps

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Abstract: Joint work with Svetlana Katok and Ilie Ugarcovici. For any Fuchsian group of the first kind with at least one cusp and with any number of elliptic points, we construct a fundamental polygon such that the Bowen–Series-like map, acting on the real line (the boundary of the upper half-plane) in a piecewise manner by generators of the group, has a two-dimensional natural extension for which the domain of bijectivity and global attractor has a simple and finite rectangular structure. This construction has several advantages over previous historical variants; the fundamental polygon is related to the free product structure of the group, and its deformation in the Teichmüller space preserves the combinatorial structure and the marking. This answers a question posed by Don Zagier.