

SINGULAR SETS OF SOME KLEINIAN GROUPS

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Introduction

In our paper [1] we showed that there exist Schottky groups whose singular sets have positive 1-dimensional measure. Since the example was very complicated, it is natural to seek for simpler examples. Further the problem how about the singular sets of more general groups occurs.

In §§ 1-3 we investigate the measures of the singular sets of some Kleinian groups and the convergence problem of the (-2) -dimensional Poincaré theta-series. The main result is that there exist Kleinian groups whose fundamental domains are bounded by five mutually disjoint circles and whose singular sets have positive 1-dimensional measure. But it seems still open whether the singular sets of the Kleinian groups whose fundamental domains are bounded by four mutually disjoint circles can have positive 1-dimensional measure or not. In § 4, as applications of the preceding chapters, similar problems about Schottky subgroups formed from Kleinian groups by inversion method are treated.

§ 1. Kleinian groups whose fundamental domains are bounded by N mutually disjoint circles

1. Consider the properly discontinuous groups G of the linear transformations whose fundamental domain B_0 is bounded by N mutually disjoint circles $\{K_i\}_{i=1}^N$. Then there exist two different kinds of generators. A generator S_i of the first kind transforms the outside of a boundary circle K_i onto the inside of a boundary circle K'_i , different from K_i , and a generator S_j of the second kind transforms the outside of K_j onto the inside of K_j , itself. The former is the hyperbolic or loxodromic transformation and the latter is the elliptic transformation with period 2.

Take any generator of G

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