

**Diego Mejía and Christian Pommerenke**

**Analytic Families of Homomorphisms into  $\mathrm{PSL}(2, \mathbb{C})$**

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**Abstract.** We develop a systematic theory of families of homomorphisms

$$h_t: G \rightarrow \mathrm{PSL}(2, \mathbb{C}), \quad t \in T,$$

that depend analytically on the complex parameter  $t$ . Important results have been obtained by Jørgensen, Riley and Sullivan.

The main new concept is the singular set  $S$  of parameter values  $t$  for which some Moebius transformation  $h_t(x)$  becomes non-loxodromic. We study the structure and geometry of  $S$  and the behaviour of  $h_t$  in domains  $V \subset T \setminus \bar{S}$ , in particular the extension to values in  $\partial V \cap \partial T$ .

**Keywords.** Analytic family, homomorphism, Kleinian group, singular set, Moebius transformation, trace, non-elementary group.

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