

Loewner chains and the Loewner differential equation in several complex variables. Applications

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Abstract

In this paper we survey some of the most important properties of Loewner chains and their transition mappings on the unit ball B in \mathbb{C}^n . We consider Lipschitz regularity properties in t of a Loewner chain $f(z, t)$, and in s and t of the associated transition mapping $v(z, s, t)$, improving known recent results. Various consequences are given. Next we consider the role of parametric representation in Loewner theory in higher dimensions. We shall also investigate the general form of solutions to the Loewner differential equation on the unit ball in \mathbb{C}^n . Finally, we shall present some sufficient conditions for the first element of a Loewner chain to be extended quasiconformally to the whole \mathbb{C}^n , and we shall give several consequences and applications.