LOEWNER CHAINS AND QUASICONFORMAL EXTENSIONS OF HOLOMORPHIC MAPPINGS IN \mathbb{C}^n

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Abstract. In this paper, by using the method of Loewner chains, we give an univalence criterion which contains as particular cases some univalence criteria for holomorphic mappings in the unit ball of \mathbb{C}^n . Also, we obtain a sufficient condition for a normalized quasiregular mapping $f \in \mathcal{H}(B)$ to be extended to a quasiconformal homeomorphism of \mathbb{R}^{2n} onto itself.

MSC 2000. 32H99, 30C45.

Key words. Loewner chains, Loewner differential equation, quasiregular mapping, quasiconformal mapping, quasiconformal extension.

REFERENCES

- BECKER, J., Löewnersche Differentialgleichung und quasikonform fortsetzbare schlichte Functionen, J. Reine Angew. Math., 255 (1972), 23–43.
- [2] BRODKSII, A.A., Quasiconformal extension of biholomorphic mappings, In: Theory of Mappings and Approximation of Functions, 3–34, Naukova Durka, Kiew, 1983.
- [3] CURT, P., A generalization in n-dimensional complex space of Ahlfors and Becker's criterion for univalence, Stud. Univ. Babeş-Bolyai Math., 39 (1994), 31–38.
- [4] CURT, P., A univalence criterion for holomorphic mappings in Cⁿ, Mathematica (Cluj), 37(60) (1995), 67–71.
- [5] CURT, P., A sufficient condition for univalence of holomorphic mappings in Cⁿ, Mem. Sect. Stiințifice Iași, seria IV, XIX (1996), 49–53.
- [6] CURT, P., Special Chapters of Geometric Function Theory of Several Complex Variables, Editura Albastră, Cluj-Napoca, 2001 (in Romanian).
- [7] CURT, P., Quasiconformal extensions of holomorphic maps in Cⁿ, Mathematica (Cluj), 46(69) (2004), 55–60.
- [8] CURT, P. and KOHR, G., Subordination chains and Loewner differential equations in several complex variables, Ann. Univ. Marie Curie-Skłowska Sect. A, 57 (2003), 35–43.
- [9] CURT, P. and KOHR, G., Quasiconformal extensions and q-subordination chains in Cⁿ, Mathematica (Cluj), 49(72) (2007), 149–159.
- [10] CURT, P. and KOHR, G., The asymptotical case of certain quasiconformal extensions results for holomorphic mappings in Cⁿ, Bull. Belg. Math. Soc. Simon Stevin, 14 (2007), 653–667.
- [11] CURT, P. and KOHR, G., Some remarks concerning quasiconformal extensions in several complex variables, J. Inequal. Appl., 2008, 16 pages, Article ID690932.
- [12] GRAHAM, I., HAMADA, H., KOHR, G., Parametric representation of univalent mappings in several complex variables, Canad. J. Math., 54 (2002), 324–351.

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- [13] GRAHAM, I. and KOHR, G., Geometric Function Theory in One and Higher Dimensions, Marcel Dekker Inc., New York, 2003.
- [14] HAMADA, H. and KOHR, G., Loewner chains and quasiconformal extension of holomorphic mappings, Ann. Polon. Math., 81 (2003), 85–100.
- [15] HAMADA, H. and KOHR, G., Quasiconformal extension of biholomorphic mappings in several complex variables, J. Anal. Math., 96 (2005), 269–282.
- [16] PFALTZGRAFF, J.A., Subordination chains and univalence of holomorphic mappings in \mathbb{C}^n , Math. Ann., **210** (1974), 55–68.
- [17] PFALTZGRAFF, J.A., Subordination chains and quasiconformal extension of holomorphic maps in Cⁿ, Ann. Acad. Sci. Fenn. Ser. A I Math., 1 (1975), 13–25.

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