95d:30027

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Von der Bieberbachschen Vermutung zum Satz von de Branges sowie der Beweisvariante von Weinstein. (German) [From Bieberbach's conjecture to the theorem of de Branges and the alternative proof of Weinstein]

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30C50 (01A60 30C55)

References: 0 **Reference Citations: 0** **Review Citations: 0**

This well-written article provides an excellent survey of the history of the de Branges theorem, from the time it was first mentioned as a conjecture in a footnote in one of Bieberbach's papers, up to and including Weinstein's simplification of one of the important steps in the proof. Some of the main characters in the dramatic proof were Isaak Milin, Malcolm Robertson, and Charles Loewner, who had to leave Czechoslovakia for a position at the University of Louisville to avoid being murdered [see A. W. Goodman, *Univalent functions. Vol. II*, Mariner, Tampa, FL, 1983; MR 85j:30035b(Chapter 18); now published by Polygonal Publishing House, Washington, NJ; per revr.].

As the author remarks, "History shows that one worker by himself did not bring all the necessary ingredients together for the proof, but (the proof) was the work of many. In particular, Loewner introduced the dynamics of univalent functions and the associated differential equation, Robertson discovered the relevance of the weighted quadratic means, and Lebedev and Milin introduced the exponentiation of the logarithmic coefficients."

The author fails to mention that Szász also proved the conjecture $|a_n| \leq n$ when all the coefficients are real. He also fails to mention that A. Z. Grinshpan proved Milin's conjecture in a number of important special cases [Sibirsk. Mat. Zh. **13** (1972), 1145–1157, 1199; MR **48** #6403]. His list of references, which contains 59 items, is unusually complete. One could add papers by G. Gasper [Complex Variables Theory Appl. **7** (1986), no. 1-3, 45–50; MR 88e:30047], L. de Branges [in *The Bieberbach conjecture (West Lafayette, Ind., 1985)*, 51–67, Amer. Math. Soc., Providence, RI, 1986; MR 88j:30034] and P. G. Todorov [Acad. Roy. Belg. Bull. Cl. Sci. (6) **3** (1992), no. 12, 335–346; MR 95c:30024].

{For the entire collection see 94i:00013}

Reviewed by *A. W. Goodman*