

[Lin, Vladimir](#)

Around the 13th Hilbert problem for algebraic functions. (English) [\[Zbl 0846.32014\]](#)

Teicher, Mina (ed.), Proceedings of the Hirzebruch 65 conference on algebraic geometry, Bar-Ilan University, Ramat Gan, Israel, May 2-7, 1993. Ramat-Gan: Bar-Ilan University, Isr. Math. Conf. Proc. 9, 307-327 (1996).

Let $u_n(z_1, \dots, z_n)$ be the “universal n -valued entire algebraic function of n complex variables” defined by the n -th degree equation: $u^n + z_1 u^{n-1} + \dots + z_n = 0$. In the context of algebraic functions, a query of the type of Hilbert’s 13th problem may be formulated as asking whether u_n can be expressed as a finite composition of algebraic functions of some fewer number of variables (univalued holomorphic functions of any number of variables being allowed gratis). The author defines a “restricted composition problem” by paying particular attention to the branch loci of the various functions involved. For this problem he surveys and proves some results. Some well-known facts about the nonexistence of global cross sections for the universal curve over the Teichmüller space of the sphere with k punctures are utilized.

For the entire collection see [\[Zbl 0828.00035\]](#).

Reviewer: [S.Nag \(Madras\)](#)

MSC:

- [32H02](#) Holomorphic mappings, (holomorphic) embeddings and related questions in several complex variables
- [14H05](#) Algebraic functions and function fields in algebraic geometry
- [32G15](#) Moduli of Riemann surfaces, Teichmüller theory (complex-analytic aspects in several variables)

[Cited in 2 Documents](#)

Keywords:

[compositions of holomorphic mappings](#); [algebraic functions](#); [Teichmüller space](#)