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Abstracts of Short Communications and Posters

Section:

8. Analysis

1991 MS Classification: 26, 41
van der Hoeven, Joris, Ecole polytechnique, France
Proof of a conjecture of Hardy about L-functions
An L-function is a function constructed from the reals and a variable x by the field operations, exponentiation, logarithm and algebraic functions. In his famous work about growth orders at infinity, Hardy proved that the germs of L-functions at infinity form a totally ordered differential field. He also raised the question whether the functional inverse of $\log x \log \log x$ can be expanded in the asymptotic scale of L-functions. We will present a proof that this is not possible. Our proof is partially based on an algorithm to compute asymptotic expansions of L-functions automatically; this algorithm will also be presented and we give some applications.
Reference: Asymptotique automatique, PhD. Thesis, Joris van der Hoeven, Ecole polytechnique, France, 1997.