

**ZMATH 1996f.03725**

**Lang, S.**

**Introduction to diophantine approximations.**

Springer, New York, NY (ISBN 0-387-94456-7). 140 p. (1995).

The book gives an introduction to continued fractions and diophantine approximations, readable by undergraduates but also of interest at the research level because the theory leads immediately into unsolved problems. Emphasis is placed on classical numbers, and also phenomena valid for almost all numbers. For instance, the continued fraction for  $e$  is computed. Tables of computations done with W. Adams and H. Trotter have been added to the original edition to see experimental data concerning possible conjectures about the behavior of algebraic numbers with respect to their continued fractions and approximations by rational numbers. The subject is particularly interesting for undergraduates who can be put in contact with deep mathematics without a very extensive building of theories. One general idea is that algebraic numbers will exhibit a behaviour that is the same as almost all numbers in a probabilistic sense, except under very specific structural conditions, namely quadratic numbers. Results for almost all numbers (due to Khintchine) show an interplay between calculus and number theory, which will also show undergraduates how analysis mixes with number theory. (orig)

*Classification:* F65

*Keywords:* approximation to algebraic numbers; diophantine inequalities; algebraic numbers; transcendental numbers; asymptotic approximation; quadratic irrationalities