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Nota di contenuto	Frontmatter -- Vorwort -- Inhalt -- Einleitung -- 1. Interpretierbarkeit -- 2. Die Theorie der reell abgeschlossenen Körper RCF -- 3. Negative Resultate über Interpretierbarkeit in RCF -- 4. Interpretierbarkeit zwischen Theorien von Körpern -- 5. Arithmetisierung der Geometrie -- 6. Eine erststufige Theorie reeller und natürlicher Zahlen -- 7. Zweitstufige Theorien der reellen Zahlen -- Schluss -- Anhang -- Literatur -- Sachregister
Sommario/riassunto	Die Metamathematik der reellen Zahlen kann durch verschiedene formale Theorien der reellen Zahlen entwickelt werden. Ausgehend von der Theorie der reell abgeschlossenen Körper werden Erweiterungen beweistheoretisch untersucht und mit anderen typischen mathematischen Theorien mittels der Relation der Interpretierbarkeit verglichen. Die Ergebnisse bestimmen die logischen Ressourcen jener Theorien und begründen ein eigenes Reduktionsprogramm. In contrast to the importance of real numbers for mathematical sciences a metamathematical approach to real numbers has never been developed systematically, a gap this book undertakes to fill. The investigated formal theories of real numbers are based on the theory of real closed fields, due to Tarski known as a complete theory. Theory

extensions are considered by adding different set-theoretical or arithmetical concepts, like a pairing function, a predicate for natural numbers or second-order logic. To capture the special features of the metamathematics of real numbers the intertheoretical relation of interpretability is presented and examined, particularly slight variations on the common definition that allow a more accurate classification of the theories of real numbers. Thus the main theorems proven in this book are positive and negative propositions about the interpretability of and in theories of real numbers, constituting a hierarchy among them and comparing them with other canonical mathematical theories. Philosophically the results determine the resources that are employed in these theories and establish a reducibility approach to real numbers inspired by Hilbert's philosophy of mathematics.