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Incorporating annotations into the object language; 3.3.2 Axiomatic systems based on the notion of 'such that'; 3.3.2.1 Hilbert's - and - calculi; 3.3.2.2 Hailperin's -calculus; 3.4 Model-theoretic semantics; 3.4.1 Constants versus variables revisited; 3.4.1.1 Skolem resolution; 3.4.1.2 Herbrand resolution; 3.4.2 Eliminability and conservative extensions; 3.5 Finale
3.5.1 Extensions to higher-order existentials 3.5.2 Further connections to model-theoretic interpretations; 3.6 Examples of deduction; 3.6.1 Generic examples; 3.6.2 Specific examples; 4. Normalisation; Preamble; 4.1 Introduction; 4.2 Proof transformations in labelled deduction; 4.3 Equivalences between proofs in LND; 4.4 The term rewriting system for LND; 4.4.1 Defining the LND-TRS; 4.4.2 The sort decreasing property; 4.4.3 Defining an order; 4.4.3.1 Analyzing the -reductions; 4.4.4 Proving the termination property; 4.4.4.1 Proof for the subset of reductions
4.4.4.2 Proof for the subset of reductions 4.4.4.3 Proof for the subset of reductions:; 4.4.5 Proving the confluence property; 4.5 Examples of transformations between proofs; 4.6 Final remarks; Appendix: Proof of confluence of LND-TRS; 5. Natural Deduction for Equality; 5.1 Introduction; 5.2 Labelled deduction; 5.2.1 Identifiers for (compositions of) equalities; 5.2.2 The proof rules; 5.3 Finale; 6. Normalisation for the Equality Fragment; Preamble; 6.1 General rules; 6.2 The 'subterm substitution' rule; 6.3 The - and -rules; 6.4 Term rewriting systems; 6.4.1 Termination property
6.4.2 Confluence property

Sommario/riassunto

This comprehensive book provides an adequate framework to establish various calculi of logical inference. Being an 'enriched' system of natural deduction, it helps to formulate logical calculi in an operational manner. By uncovering a certain harmony between a functional calculus on the labels and a logical calculus on the formulas, it allows mathematical foundations for systems of logic presentation designed to handle meta-level features at the object-level via a labeling mechanism, such as the D Gabbay's Labelled Deductive Systems. The book truly demonstrates that introducing 'labels' is us