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Nota di contenuto	Microcode Verification – Another Piece of the Microprocessor Verification Puzzle -- Are We There Yet? 20 Years of Industrial Theorem Proving with SPARK -- Towards a Formally Verified Proof Assistant -- Implicational Rewriting Tactics in HOL -- A Heuristic Prover for Real Inequalities -- A Formal Library for Elliptic Curves in the Coq Proof Assistant -- Truly Modular (Co) data types for Isabelle/HOL -- Cardinals in Isabelle/HOL -- Verified Abstract Interpretation Techniques for Disassembling Low-level Self-modifying Code -- Showing Invariance Compositionally for a Process Algebra for Network Protocols -- A Computer-Algebra-Based Formal Proof of the

Irrationality of (3) -- From Operational Models to Information Theory; Side Channels in pGCL with Isabelle -- A Coq Formalization of Finitely Presented Modules -- Formalized, Effective Domain Theory in Coq -- Completeness and Decidability Results for CTL in Coq -- Hypermap Specification and Certified Linked Implementation Using Orbits -- A Verified Generate-Test-Aggregate Coq Library for Parallel Programs Extraction -- Experience Implementing a Performant Category-Theory Library in Coq -- A New and Formalized Proof of Abstract Completion -- HOL with Definitions: Semantics, Soundness and a Verified Implementation -- Verified Efficient Implementation of Gabow's Strongly Connected Component Algorithm -- Recursive Functions on Lazy Lists via Domains and Topologies -- Formal Verification of Optical Quantum Flip Gate -- Compositional Computational Reflection -- An Isabelle Proof Method Language -- Proof Pearl: Proving a Simple Von Neumann Machine Turing Complete -- The Reflective Milawa Theorem Prover Is Sound (Down to the Machine Code That Runs It) -- Balancing Lists: A Proof Pearl -- Unified Decision Procedures for Regular Expression Equivalence -- Collaborative Interactive Theorem Proving with Clide -- On the Formalization of Z-Transform in HOL -- Universe Polymorphism in Coq -- Asynchronous User Interaction and Tool Integration inIsabelle/PIDE -- HOL Constant Definition Done Right -- Rough Diamond: An Extension of Equivalence-Based Rewriting -- Formal C Semantics: Comp Cert and the C Standard -- Mechanical Certification of Loop Pipelining Transformations: A Preview.

Sommario/riassunto

This book constitutes the proceedings of the 5th International Conference on Interactive Theorem Proving, ITP 2014, Held as Part of the Vienna Summer of Logic, VSL 2014, in Vienna, Austria, in July 2014. The 35 papers presented in this volume were carefully reviewed and selected from 59 submissions. The topics range from theoretical foundations to implementation aspects and applications in program verification, security and formalization of mathematics.