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Sommario/riassunto

Gaisi Takeuti was one of the most brilliant, genius, and influential logicians of the 20th century. He was a long-time professor and professor emeritus of mathematics at the University of Illinois at Urbana-Champaign, USA, before he passed away on May 10, 2017, at the age of 91. Takeuti was one of the founders of Proof Theory, a branch of mathematical logic that originated from Hilbert's program about the consistency of mathematics. Based on Gentzen's pioneering works of proof theory in the 1930s, he proposed a conjecture in 1953 concerning the essential nature of formal proofs of higher-order logic now known as Takeuti's fundamental conjecture and of which he gave a partial positive solution. His arguments on the conjecture and proof theory in general have had great influence on the later developments of mathematical logic, philosophy of mathematics, and applications of mathematical logic to theoretical computer science. Takeuti's workranged over the whole spectrum of mathematical logic, including set theory, computability theory, Boolean valued analysis, fuzzy logic, bounded arithmetic, and theoretical computer science. He wrote many monographs and textbooks both in English and in Japanese, and his monumental monograph Proof Theory, published in 1975, has long been a standard reference of proof theory. He had a wide range of interests covering virtually all areas of mathematics and extending to physics. His publications include many Japanese books for students and general readers about mathematical logic, mathematics in general, and connections between mathematics and physics, as well as many essays for Japanese science magazines. This volume is a collection of papers based on the Symposium on Advances in Mathematical Logic 2018. The symposium was held September 18–20, 2018, at Kobe University, Japan, and was dedicated to the memory of Professor Gaisi Takeuti.