On Gödel's Argument for $\mathfrak{c} = \omega_2$

Paul Larson

In 1970, Gödel submitted a paper to the Proceedings of the National Academy of Sciences U.S.A. entitled *Some considerations leading to the probable conclusion that the true power of the continuum is* $\aleph_2$, in which he presented four axioms which he found plausible, and claimed that they settled the value of the continuum. As shown by Martin and Solovay, and later admitted by Gödel, the argument was flawed, and it was not published until its recent appearance in Gödel's collected works. In joint work with Jörg Brendle and Stevo Todorčević, we start with three axioms that appear either implicitly or explicitly in Gödel's argument, and using his argument, derive from them that $\mathfrak{c} \leq \omega_2$. In doing so, we show that there is a theorem for which Gödel's argument is the best known proof. The argument, aside from its historical interest, raises several issues which are interesting in their own right.

Address: Kobe University, Department of Computer and Systems Engineering, Kobe University, Kobe 657-8501, Japan
E-mail: larson@alan.scitec.kobe-u.ac.jp