

Dini's Theorem in the Light of Reverse Mathematics

Peter Schuster

Mathematisches Institut – Universitaet Muenchen

`pschust@mathematik.uni-muenchen.de`

(joint work with Josef Berger, Munich)

Compactness of the domain ensures the uniform convergence of every bounded increasing sequence of real-valued continuous functions with continuous least upper bound. This theorem of Dini is usually proved with the Heine-Borel principle; we aim at the converse implication. Dini's theorem turns out to directly imply Brouwer's fan theorem for decidable bars, the contrapositive of the weak form of König's Lemma. Our result seems to enrich the existing literature on reverse mathematics, and led us to a less specific formulation of Dini's theorem. The proof techniques we use are typical for the constructive branch of reverse mathematics recently put forward by Ishihara and Veldman.