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Mathematical fuzzy logic and natural numbers. (English) Zbl 1139.03016
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Recently, Grzegorzczyk has posed the following problem: When weakening Robinson's arithmetic Q by replacing the binary operations of addition and multiplication by ternary operations that define functions possibly not total, is such a theory still essentially undecidable such as Robinson's classical arithmetic? The paper gives a positive answer to this problem (the introduced ternary relations do not necessarily define total crisp functions), exploiting mathematical fuzzy logic and formulating this weakened arithmetic as fuzzy arithmetic.

Reviewer: [Radko Mesiar \(Bratislava\)](#)

MSC:

[03B52](#) Fuzzy logic; logic of vagueness
[03F30](#) First-order arithmetic and fragments

Cited in **1** Review
Cited in **3** Documents

Keywords:

fuzzy arithmetic; fuzzy logic; Robinson's arithmetic; undecidability