

- FEDERICO MALLEA* AND MARCELO CONIGLIO, *On the decidability of self-extensional logics of formal inconsistency.*

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RmbC is a logic belonging to the family of paraconsistent logics called *Logics of Formal Inconsistency* (LFIs). It is characterized by a non-explosive negation \neg and a consistency operator \circ that allows to recover the explosion principle in a controlled manner. RmbC is an extension of mbC, the basic LFI, obtained by the addition of the replacement property by means of two (global) inference rules. This logic, along with a family of self-extensional LFIs that are axiomatic extensions of RmbC, was introduced in 2021 by Carnielli, Coniglio, and Fuenmayor.

The decidability of RmbC and these axiomatic extensions remains an open question. This talk presents progress on this important open problem by showing that RmbC is decidable by means of BALFIs, its natural class of algebraic models. BALFIs (Boolean algebras with LFI operators) are expansions of Boolean algebras with two unary operators interpreting \neg and \circ . The decidability of RmbC was obtained via a constructive proof of the finite model property (FMP) for RmbC, adapted from ideas in Harrop's classic 1958 paper. The construction is effective and allows the study of validity in RmbC to be reduced to the evaluation of a finite family of finite models.

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Keywords: LFIs, LFIs with replacement, paraconsistency, decidability, finite model property, BALFIs, self-extensionality.

[1] CARNIELLI W., CONIGLIO M.E., FUENMAYOR D., *Logics of Formal Inconsistency enriched with replacement: An algebraic and modal account*, *The Review of Symbolic Logic.*, vol. 15 (2022), no.3, pp. 771–806.

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