also use our results to build models with no *P*-points and with arbitrarily large continuum, which was also an open question. These results were obtained with David Chodounský.

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KLEIDSON ÊGLICIO CARVALHO DA SILVA OLIVEIRA, *Paraconsistent Logic Programming in Three and Four-Valued Logics*, University of Campinas, Brazil, 2017. Supervised by Marcelo Esteban Coniglio. MSC: 03B53. Keywords: Logic programming, Paraconsistent logic, Many-valued logics.

Abstract

From the interaction among areas such as Computer Science, Formal Logic, and Automated Deduction arises an important new subject called Logic Programming. This has been used continuously in the theoretical study and practical applications in various fields of Artificial Intelligence. After the emergence of a wide variety of non-classical logics and the understanding of the limitations presented by first-order classical logic, it became necessary to consider logic programming based on other types of reasoning in addition to classical reasoning. A type of reasoning that has been well studied is the paraconsistent, that is, the reasoning that tolerates contradictions. However, although there are many paraconsistent logics with different types of semantics, their application to logic programming is more delicate than it first appears, requiring an in-depth study of what can or cannot be transferred directly from classical first-order logic to other types of logic.

Based on studies of Tarcisio Rodrigues on the foundations of Paraconsistent Logic Programming (2010) for some Logics of Formal Inconsistency (**LFI**s), this thesis intends to resume the research of Rodrigues and place it in the specific context of **LFI**s with three- and four-valued semantics. This kind of logics are interesting from the computational point of view, as presented by Luiz Silvestrini in his Ph.D. thesis entitled "A new approach to the concept of quase-truth" (2011), and by Marcelo Coniglio and Martín Figallo in the article "Hilbert-style presentations of two logics associated to tetravalent modal algebras" [*Studia Logica* (2012)]. Based on original techniques, this study aims to define well-founded systems of paraconsistent logic programming based on well-known logics, in contrast to the *ad hoc* approaches to this question found in the literature.

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ANA CLAUDIA DE JESUS GOLZIO, *Non-Deterministic Matrices: Theory and Applications to Algebraic Semantics*, University of Campinas, Brazil, 2017. Supervised by Marcelo Esteban Coniglio. MSC: 03G27. Keywords: Algebraic logic, Non-classical logic, Multialgebras, Non-deterministic semantics, Universal algebra, Category theory.

Abstract

We call multioperation any operation that return for even argument a set of values instead of a single value. Through multioperations we can define an algebraic structure equipped with at least one multioperation. This kind of structure is called multialgebra. The study of them began in 1934 with the publication of a paper of Marty. In the realm of Logic, multialgebras were considered by Avron and his collaborators under the name