4th International Conference on Physics

September 17-18, 2018 | Berlin, Germany

Problems on quasi-sets in quantum mechanics

Eliza Wajch

Siedlce University of Natural Sciences and Humanities, Poland

This research concerns consequences of modifications of several axioms of Krause's remarkable quasi-set theory (QST) in which quantum objects, indistinguishability and quasi-cardinals are taken into consideration. A motivation for changes of QST, strictly relevant to applications in quantum mechnics, will be given. A notion of a model of QST is suggested since satisfactory constructions of models of QST are needed. It can be shown that, paradoxically, it may happen in a model of QST that there exists an infinite collection of pairwise distinct quasi-cardinal assignments such that distinct members of this collection assign distinct quasi-cardinals to the same quasi-set of micro-atoms of QST although every quasi-set has only one quasi-cardinal with respect to a given quasi-cardinal assignment. This is an answer to the following question posed, in November 2017, by F Holik who had been inspired by my results shown partly at the 2nd International Conference on Physics in Brussels in August 2017: is it possible to create a denumerable family of equally valid quasi-cardinal functions in such a way that it can be proved that a particle number of a given quasi-set cannot be defined? Comments on another question of F Holik whether different quasi-cardinal functions can represent different outcomes of a physical experiment with a particle number measurement will be made.

Biography

Eliza Wajch completed her PhD from Lodz University in 1988 and her habilitation in Poland in 1998. She is a Mathematician working on topology, axiomatic foundations of mathematics and physics, as well as on applied mathematics. She participated in international conferences on topology, real analysis, set theory, number theory and on physics. She is an Author or Co-author of about 40 articles and of one book. Currently, she is an Associate Professor at the Department of Mathematics and Physics of Siedlce University of Natural Sciences and Humanities in Siedlce in Poland.

eliza.wajch@wp.pl eliza.wajch@uph.edu.pl

Notes: