AN AXIOMATIC THEORY OF CLASSES FOR PHYSICS

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My current scientific work on an axiomatic theory of classes is relevant to Hilbert's idea to axiomatize all of physics and, of course, to apply axiomatized mathematics to deduce and explain mathematical forms of laws of physics tested in experiments. The objects of my theory are mathematical, physical or, roughly speaking, mixtures of mathematical and physical objects such that that the mixtures exist follows from the axioms of the theory. Every finite ordinal number, the class of all finite ordinals and some other objects belong to the totality of all mathematical objects. The totality of all elementary particles is contained in the totality of all physical objects. Not all mathematical objects are elements of classes. For instance, proper classes are not elements of classes. That the class of all finite ordinals is a set is neither true nor false in my basic theory. The axiom of choice (AC) is none of the axioms of the basic theory, although AC is an axiom of some hypothetical extensions of the theory. Prototypes of the axioms of my theory are in ZFC and in ZFA, although one may recognize that the theory I am working on is closer to NBG and MK than to ZFC or ZFA. I show that different notions of finite sets lead to different notions of countability when a set X is called at most countable in sense s if every infinite in sense s subset of X is equipollent with X. One of the newest mathematical problems that trouble me is whether G. Gutierres is right when he informs that it is really true and easy to prove in ZF that the Hausdorff completion of the space of all rational numbers is a complete metric space. I dare say that to check the correctness of the proof that Gutierres has in mind, it seems necessary to use a hypothetical axiom which is not in ZF.

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