Call for Papers: Particle Physics after the Higgs-discovery: Philosophical Perspectives

Journal: Studies in History and Philosophy of Modern Physics

Guest Editors: Simon Friederich, Dennis Lehmkuhl

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The recent discovery at the LHC of a particle with properties as expected for the Higgs boson is a decisive event in the history of particle physics. We invite papers that investigate the central conceptual and methodological challenges for fundamental physics which are related to this event.

On the one hand, we are interested in contributions that analyze the conceptual foundations of the Higgs mechanism in particular and the Standard Model of elementary particle physics in general; on the other, we are interested in contributions that investigate one (or more) of the theoretical approaches to high energy physics which go beyond (the Higgs mechanism and) the Standard Model. Among the most-discussed such approaches are supersymmetry, extra-dimensions, and dynamical symmetry breaking. We encourage authors to critically investigate the conceptual and/or methodological aspects of any of the most-discussed motivations for these approaches such as, for instance, the so-called naturalness (or "fine-tuning") problem for the Higgs boson mass, the absence of a dark matter candidate among Standard Model particles, considerations from quantum gravity, as well as general arguments related to symmetries and their breaking. In particular, we are interested in contributions which highlight the possible impact of the recent discovery on these approaches and the arguments which support them.

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