

Forcing: Conceptual Change in the Foundations of Mathematics

Initiative: Freigeist-Fellowships

Bewilligung: 03.07.2017

Laufzeit: 5 Jahre

Projekt-Website: <https://forcing-project.com>

Can the fundamentals of mathematics change? The mathematical technique of forcing compels us to reconsider this long-standing question, as it allows us to build an infinite plurality of mathematical worlds in which differing mathematical truths hold. As such, forcing is both a mathematical technique and, through its use in set theory as a foundation of mathematics, a philosophical concept. The project will show that the practice of forcing introduced a conceptual change with unique characteristics in set theory: the change is still ongoing; it is not the result of a new programmatic idea, but the result of extensive use; it gives rise to a conceptual discrepancy between the older disciplinary self-image and the new mathematical practice; finally, there is a lack of awareness and acceptance of this change among set theorists. The project argues that acknowledging the change can lead to a new, pluralistic understanding of the foundations of mathematics. Approaching forcing by studying its historical development, broadening its philosophical uses and focusing on its mathematical varieties opens up an interdisciplinary framework that uses mathematical practice to argue for such a conceptual change. The impact of such a change is widespread and ranges from a re-evaluation of the foundations of mathematics to having the potential to revolutionize mathematics itself.

Projektbeteiligte

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