

MR1465092 (98i:01016) 01A55 (00A30 00A79 01A60)

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David Hilbert and the axiomatization of physics (1894–1905).

Arch. Hist. Exact Sci. **51** (1997), *no. 2*, 83–198.1432-0657

This article is an in-depth study of Hilbert's work on, and ideas about, the axiomatization of physical theories. It traces the background of Hilbert's views—his work on the foundations of geometry, and the writings of such contemporaries as Heinrich Hertz and Paul Volkmann—and reviews the axiomatic foundations Hilbert proposed for various physical disciplines (Hilbert reported extensively on this work in his 1905 Göttingen lectures on the axiomatic method). The article also comments on the influence Hilbert exerted on physicists such as Born, Carathéodory, Minkowski and Ehrenfest.

Although Hilbert's reputation is that of one of the most important modern mathematicians, he had a deep interest in—and broad knowledge of—physics. Moreover, a substantial part of his mathematical work was motivated by possible applications in physics and other natural sciences. For example, Hilbert considered geometry to be a part of physics, and intended the axiomatic system of his *Foundations of geometry* to make it clear exactly what facts of experience were at the basis of geometry. In the same vein Hilbert wanted his axiomatic method to expose clearly the facts that are fundamental for other disciplines in physics.

It is therefore wrong, argues the author, to view Hilbert as a pure formalist for whom the meaning of mathematical concepts is completely given by their place in the system of axioms. On the contrary, Hilbert always started from theories in which the concepts already possessed a definite meaning, and axiomatized those theories only to make it transparent precisely how they depend on empirical facts.

Reviewed by *Dennis Dieks*

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