Oberseminar Geschichte der Mathematik und der Naturwissenschaften

James Clerk Maxwell’s Methodological Odyssey in Electromagnetism: A Philosophical Perspective

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Abstract:

Einstein (1931): “The greatest alteration in the axiomatic basis of physics — in our conception of the structure of reality — since the foundation of theoretical physics by Newton, originated in the researches of Faraday and Maxwell on electromagnetic phenomena... Since Maxwell’s time Physical Reality has been thought of as represented by continuous fields, governed by partial differential equations, and not capable of any mechanical interpretation. This change in the conception of Reality is the most profound and fruitful that physics has experienced since the time of Newton.”

We ask, then, What was Maxwell’s key to this fundamental change in the conception of Physical Reality? By following closely the trajectory of Maxwell’s several contributions to electromagnetism, which we characterize as an odyssey, we uncover one fundamental aspect of this success — innovative methodologies.

Alle Interessierten sind herzlich eingeladen.

gez. Tilman Sauer