

Emil Rupp, Albert Einstein and the canal ray experiments on wave-particle duality: Scientific fraud and theoretical bias

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Abstract

In 1926 Emil Rupp published a number of papers on the interference properties of light emitted by canal ray sources. These articles, particularly one paper that came into being in close collaboration with Albert Einstein, drew quite some attention as they probed the wave versus particle nature of light. They also significantly propelled Rupp's career, even though that from the outset they were highly controversial. This article will review this episode, and in particular Rupp's collaboration with Einstein. Evidence that Rupp forged his results is presented and their critical reception in the socially and politically divided German physics community is discussed. These divisions fail to explain the full dynamic; the latter is attempted by turning to the role that theoretical bias on occasion has in assessing experiment. Einstein's responses in particular are analysed in this context.

Keywords:	Emil Rupp, Albert Einstein, wave-particle duality, canal rays, theoretical bias, scientific fraud
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