



High Energy Physics - Theory

Dualities in Field Theories and the Role of K-Theory

[Jonathan Rosenberg](#)

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It is now known (or in some cases just believed) that many quantum field theories exhibit dualities, equivalences with the same or a different theory in which things appear very different, but the overall physical implications are the same. We will discuss some of these dualities from the point of view of a mathematician, focusing on "charge conservation" and the role played by K-theory and noncommutative geometry. Some of the work described here is joint with Mathai Varghese and Stefan Mendez-Diez; the last section is new.

Comments: 24 pages, based on talks at the Closing Meeting on Perspectives in Deformation Quantization and Noncommutative Geometry, RIMS, Kyoto, February, 2011

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