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**Wilson lines and UV sensitivity in magnetic compactifications.** (English) Zbl 1380.81400  
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Summary: We investigate the ultraviolet (UV) behaviour of 6D  $N = 1$  supersymmetric effective (Abelian) gauge theories compactified on a two-torus ( $T_2$ ) with magnetic flux. To this purpose we compute offshell the one-loop correction to the Wilson line state self-energy. The offshell calculation is actually necessary to capture the usual effective field theory expansion in powers of  $(\partial/\Lambda)$ . Particular care is paid to the regularization of the (divergent) momentum integrals, which is relevant for identifying the corresponding counterterm(s). We find a counterterm which is a new higher dimensional effective operator of dimension  $d = 6$ , that is enhanced for a larger compactification area (where the effective theory applies) and is consistent with the symmetries of the theory. Its consequences are briefly discussed and comparison is made with orbifold compactifications without flux.

**MSC:**

**81T60** Supersymmetric field theories in quantum mechanics  
**83E30** String and superstring theories in gravitational theory

Cited in 7 Documents

**Keywords:**

effective field theories; flux compactifications; compactification and string models; supersymmetric gauge theory

**Full Text:** [DOI](#)

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