

Towards excluding a light Z' explanation of $\mu\mu \rightarrow \mu\mu \ell\ell$

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The discrepancies between $\mu\mu \rightarrow \mu\mu \ell\ell$ data and the corresponding Standard Model predictions constitute a very intriguing hint for new physics and many scenarios that can account for these anomalies have been proposed in the literature. However, only a single light new physics explanation, with a mass below the B meson scale, is possible: a light Z' boson.

I will discuss this solution together with the impact on $\mu\mu \rightarrow \mu\mu (*)$ -invisible, Drell-Yan searches for muon pairs at LHC and $\mu\mu \rightarrow \mu\mu \ell\ell$ -invisible. I will point out that the forthcoming improved limits on these processes, including the experimental sensitivities required for a proper treatment of the necessarily sizeable Z' width, can rule out a Z' explanation of $\mu\mu \rightarrow \mu\mu \ell\ell$ data with a mass below ~ 4 GeV.

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