Contribution ID: **70**   Type: **not specified**

Exclusion bounds for Z' bosons

Wednesday, 1 May 2024 16:50 (20 minutes)

We study how the recent experimental results constrain the
gauge sectors of $U(1)$ extensions of the standard model
using a novel representation of the parameter space.
We determine the bounds on the mixing angle between the massive
gauge bosons, or equivalently, the new gauge coupling as a function of
the mass $M_{Z'}$ of the new neutral gauge boson Z' in the
approximate range $(10^{-2}, 10^{4})\,$GeV$/c^2$.
We consider the most stringent bounds obtained from direct
searches for the Z'. We also exhibit the allowed parameter
space by comparing the predicted and measured values of the
ρ parameter and those of the mass of the W boson.
Finally, we discuss the prospects of Z' searches at future colliders.
The talk is based on arXiv:2402.14786.

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Session Classification: Talks