Contribution ID: **67**   Type: **Poster Abstracts**

Implication of ALEPH 30 GeV dimuon excess at the LHC

Monday, 5 June 2017 17:56 (2 minutes)

Recent reanalysis of ALEPH data on $Z \to b\bar{b} + X$ seems to indicate an existence
of the dimuon excess around 30 GeV with a branching fraction for
$Z \to b\bar{b}\mu^+\mu^-$ around 1.1×10^{-5}.
We discuss three different types of simplified models for this possible excess.
In the first class of models, we assume a new resonance couples to both $b\bar{b}$ and $\mu^+\mu^-$.
In the second model, we assume that the 30 GeV excess is a new gauge boson Z' that couples
to the SM b and a new vectorlike singlet B quark heavier than Z and not to $b\bar{b}$.
In the third model, we consider $Z \to Z'\phi$ followed by $Z' \to \mu^+\mu^-$ and
$\phi \to b\bar{b}$ assuming that the Higgs field for Z' mass is also charged under the SM
$U(1)_Y$ gauge symmetry.
We consider constraints on the models and investigate implication of the three models at the LHC.

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Session Classification: Poster session