

# Scalars 2015

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## Gauge-Higgs unification: from EW to GUT

**Content :**

The  $SO(5) \times U(1)$  gauge-Higgs EW unification is successful at low energies. The 4D Higgs boson appears as a part of the extra-dimensional component of gauge fields. It gives definitive predictions for  $H \rightarrow \gamma\gamma$ ,  $Z\gamma$  etc, consistent with 8 TeV LHC, and for  $Z'$ ,  $W'$  events to be explored at 14 TeV LHC. The model is extended to the  $SO(11)$  gauge-Higgs grand unification with fermion multiplets in 32 and 11 representations.

Although GUT multiplets show up at the KK scale much smaller than  $10^{15}$  GeV, the proton decay is naturally suppressed by the new fermion number conservation.

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