Higgs searches at LEP and the Tevatron do not have yet found a Higgs boson and thus are able to restrict the mass of the Higgs boson in the Standard Model.

These experiments also provide limits on the cross sections of specific processes involving Higgs bosons. These can be used to constrain a wide variety of models.

FeynHiggs

FeynHiggs is a Fortran program designed to facilitate the computation of Higgs sector predictions of new models against the existing constraints from LEP and the Tevatron. The user provides model information (e.g., Higgs masses, total decay widths, effective couplings) and FeynHiggs will determine whether this particular point has been excluded at 95% CL.

SM results with no HiggsBounds

The SM Higgs branching ratios and total decay width from ilcdecc (K. Akeroyd and M. Spira)


The SM ratio

\[ \frac{\sigma(p\bar{p} \rightarrow H + \text{WZ fusion})}{\sigma(p\bar{p} \rightarrow H + \text{ZZ fusion})} \]

via VBF

SM hadronic cross sections

\[ \sigma(p\bar{p} \rightarrow n + \text{H}) \rightarrow (p\bar{p} \rightarrow H + n) \]

where nm is a particular partner in H to convert between different types of input and to ensure correct normalisation of experimental limits.

Future plans for HiggsBounds

We are currently in the process of incorporating tables of \( C_{\mu,\nu} \) from LEP Higgs searches. This information will then be used by the programs

**Fitting**: Karina Williams, R. Dittmaier, A. Djouadi, J. Kalinowski, which extract SUSY Langrangian parameters from experimental data.

**MasterCode**: E. Bräuninger, M. Czakon, A. Dennehe, J. Ellis, S. Heinemeyer, S. Huber, C. Oehm, F. Pensotti, K. Wiegand, which are currently extending the program to cover SUSY searches.

**Placement**: We are currently investigating the possibility of including predicted limits for the LHC.

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