

What are global fits?

Many models on market – historically SUSY (CMSSM, MSSM etc) popular in global fits

- Which models are compatible/favoured by observed data?
- Which regions of their parameters spaces are compatible/favoured by observed data?

Perform a global fit of model to all relevant experimental data

Regardless of statistical approach (Bayesian or frequentist), global fits are almost always use likelihood

See papers by MasterCode, GAMBIT, Fittino, BayesFits, Trotta et al, Allanach et al for examples

How to get the likelihood?

Build it yourself

- Rarely complete public information available
- Sometimes, the choice seem straight-forward, e.g., if PDG reports $m_h = 125.7 \pm 0.2$ GeV, model with Gaussian likelihood
- Sometimes, it's much harder. E.g., if experiment reports numbers of observed and background events in a collider search
- Often missing information (especially correlations)

Public likelihoods

- Should be more reliable
- Closely or even exactly matching the one used in the original analysis
- Still potential problems with missing correlation information