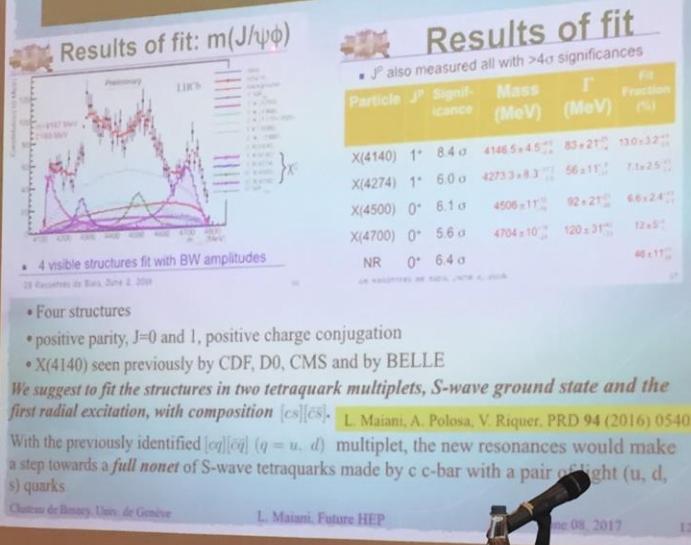
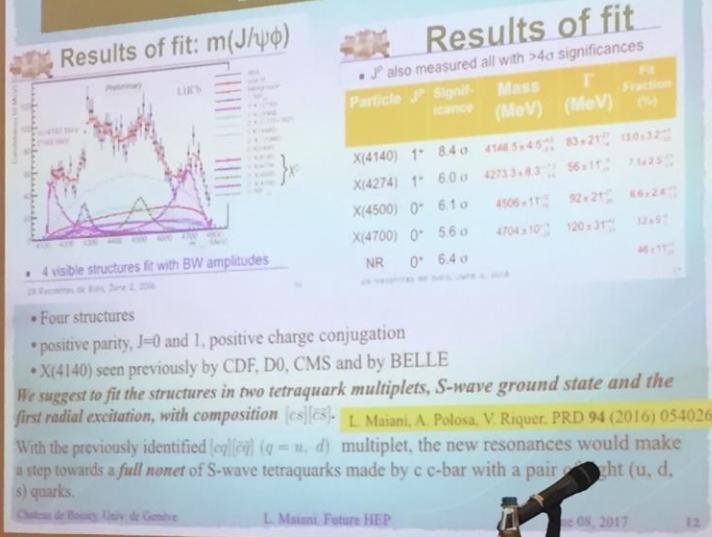
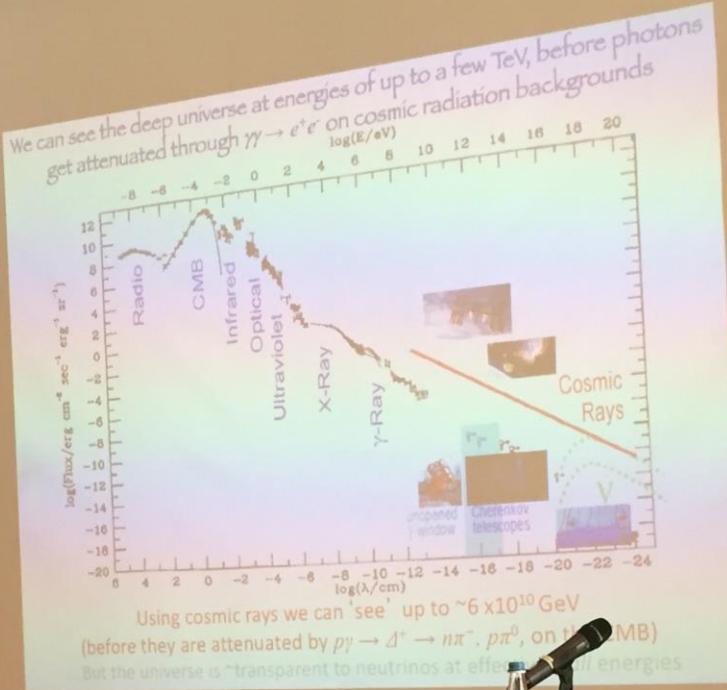


... and J/Psi-phi structures...
LHCb arXiv:1606.07895



... and J/Psi-phi structures...
LHCb arXiv:1606.07895







Arguments for absence of new heavy particles above the Fermi scale

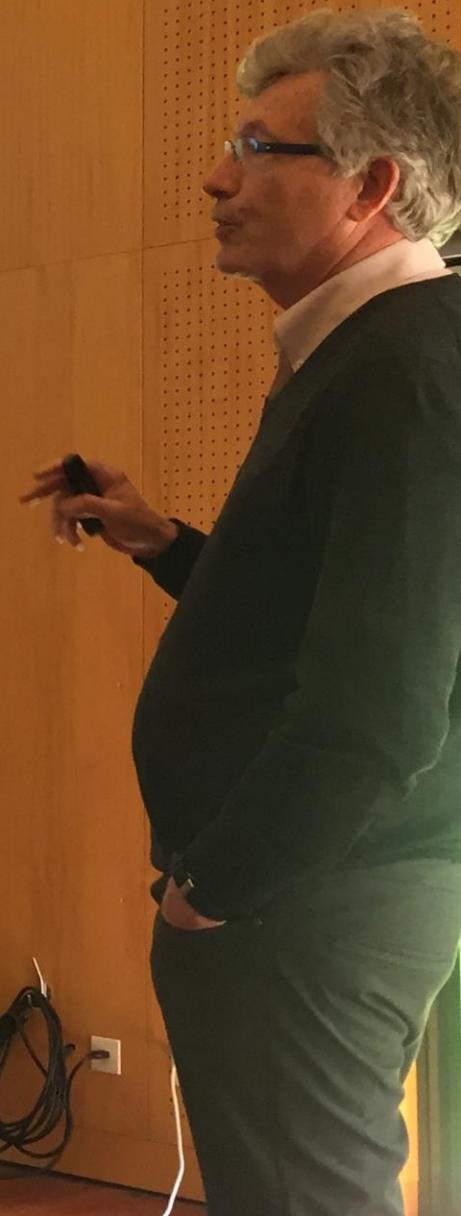
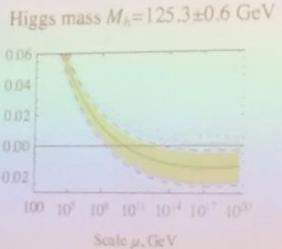
- Stability of the Higgs mass against radiative corrections



$$\delta m_H^2 \simeq \alpha_{GUT}^n M_{heavy}^2$$

No heavy particles - no large contributions - no fine tuning

- Higgs self coupling $\lambda \approx 0$ at the Planck scale (criticality of the SM - asymptotic safety?). This is violated if new particles contribute to the evolution of the SM couplings.



Physics Beyond the SM (BSM)

Experimental Observations

- Matter-antimatter asymmetry in universe → CP-Violation
- Observation Dark matter
 - require new particles or interactions beyond the SM

Unknowns

- Fermion generations
- Nature of neutrinos (Dirac or Majorana?)
- Fermion masses (Yukawa couplings)
 - no explanation yet

"Problems"

... hierarchy "problem", etc. ...









