

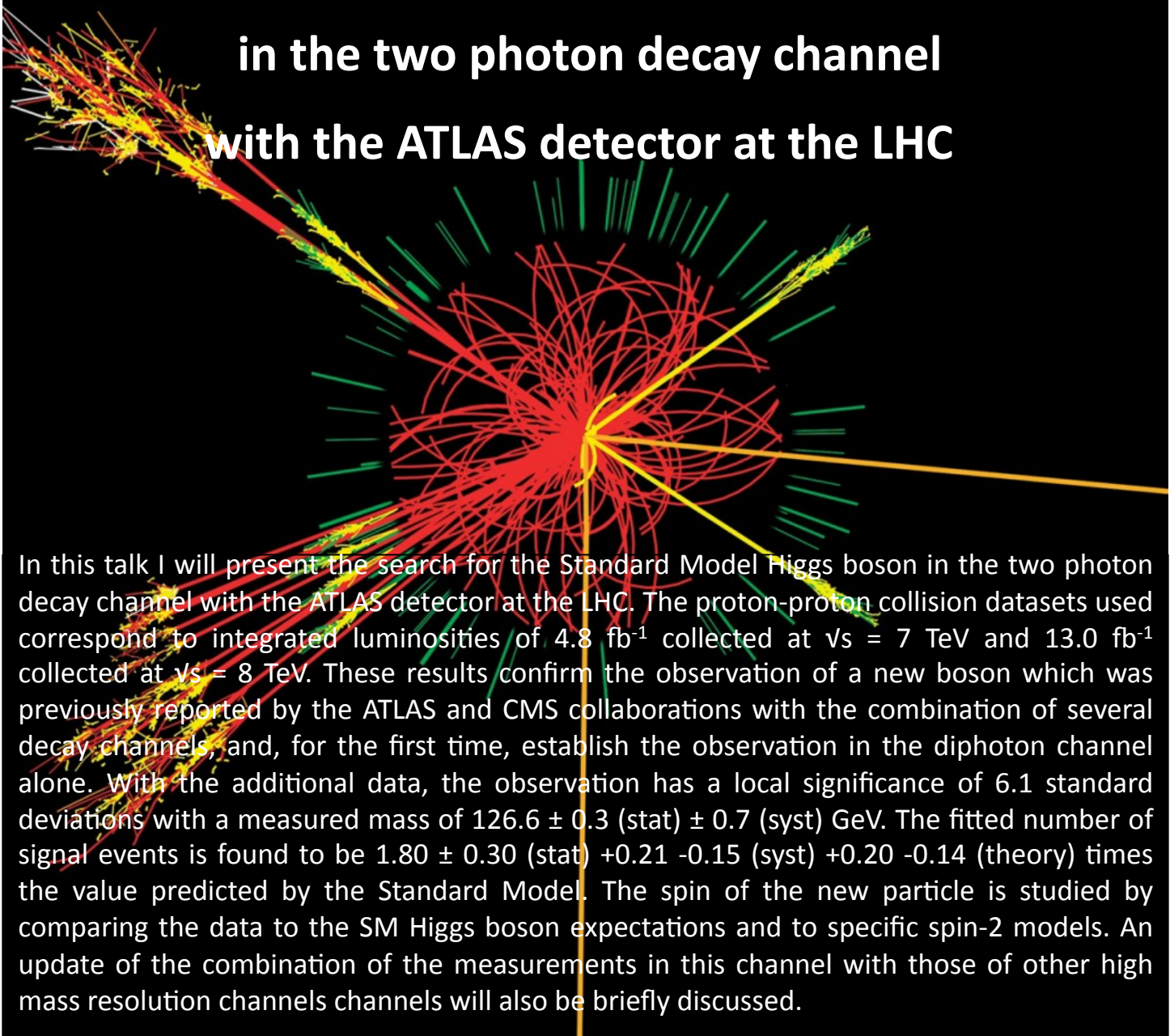
The Department of Theoretical Physics presents:

Marcos Jimenez

(DESY-ATLAS)

talking about

**Observation and study of the Higgs boson candidate
in the two photon decay channel
with the ATLAS detector at the LHC**



In this talk I will present the search for the Standard Model Higgs boson in the two photon decay channel with the ATLAS detector at the LHC. The proton-proton collision datasets used correspond to integrated luminosities of 4.8 fb^{-1} collected at $\sqrt{s} = 7 \text{ TeV}$ and 13.0 fb^{-1} collected at $\sqrt{s} = 8 \text{ TeV}$. These results confirm the observation of a new boson which was previously reported by the ATLAS and CMS collaborations with the combination of several decay channels, and, for the first time, establish the observation in the diphoton channel alone. With the additional data, the observation has a local significance of 6.1 standard deviations with a measured mass of $126.6 \pm 0.3 \text{ (stat)} \pm 0.7 \text{ (syst)} \text{ GeV}$. The fitted number of signal events is found to be $1.80 \pm 0.30 \text{ (stat)} +0.21 -0.15 \text{ (syst)} +0.20 -0.14 \text{ (theory)}$ times the value predicted by the Standard Model. The spin of the new particle is studied by comparing the data to the SM Higgs boson expectations and to specific spin-2 models. An update of the combination of the measurements in this channel with those of other high mass resolution channels will also be briefly discussed.

Wednesday, February 20, 2013 @ 15:00h, Sala 201 in Modulo C-15