ESR 18, IFJ-PAN

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The Higgs quest - exploring electroweak symmetry breaking at the LHC

Search for Extended Scenarios of Electroweak Symmetry Breaking with the ATLAS Experiment at the LHC

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With the supervision of Professor **Pawel Bruckman**
At the Institute of physics Jądrowej PAN
Start from September 2015

60 years
The Henryk Niewodniczański
Institute of Nuclear Physics
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ESR 18 Background

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Attending African school of fundamental physics and its application

ESR18 Research Work in the Project

The development of high-precision predictions for Higgs physics, including signal, background and their interference in Standard Model-like Higgs scenarios and also in beyond standard electroweak symmetry breaking scenarios.
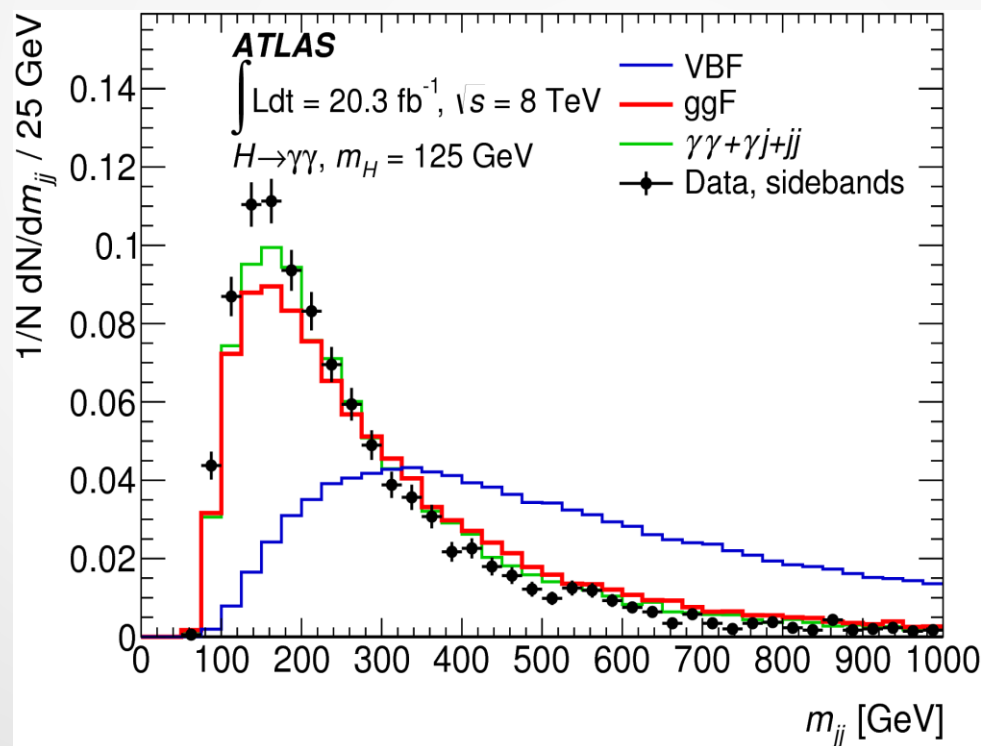
ESR18 Research Work in the Project

- Tau lepton

- In search of new physics

- Measure parameters of standard model

- Spin of Tau lepton used for the sake of separation of signal from background or in measuring properties of particles decaying to Tau lepton.

ESR18 Research Work in the Project
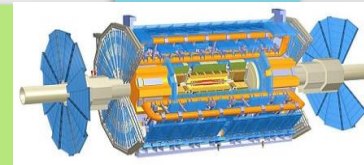
I. Study of TauSpinner algorithm in order to develop high precision prediction for Higgs physics in 2->2 processes.

II. Installation and validation of TauSpinner algorithm including 2->4 processes in the framework of the ATLAS experiment. Using TauSpinner algorithm including 2->4 processes for validation of TauSpinner algorithm including 2->2 processes.

III. Precision calculation for vector boson scattering in order to Construct the observables and testing the observables with TauSpinner algorithm

IV. Optimization of observables for vector boson scattering processes in ATLAS experiment.

V. Evaluation of necessity of TauSpinner including 2->3 process, development of such algorithm if needed.

VI. Optimization of selection of the charged Higgs signal in its decays to tau leptons.

VII. Background estimation for the charged Higgs search in ATLAS.

ESR 18   ??Questions??

Marzieh Bahmani, ESR18