



Dipartimento di Fisica "G. Occhialini"
Piazza della Scienza, 3
20126 Milano
Tel. (+39) 02.6448.2345
Fax (+39) 02.6448.2585
Web <http://fisica.mib.infn.it>

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Dear Professor Contreras Nuno,

I read with interest Ing. Ondrej Penc's PhD dissertation with title "Vector Boson Scattering and ZZ Production at ATLAS Detector". The candidate reports in this work a study of the ZZ production and the first observation of the rarest process ever measured at the Large Hadron Collider (LHC) installed at the CERN research center.

The description of the result is complete and accurate, starting from an effective overview of its theoretical foundations and motivations, which clearly describes the context of the work and stresses the importance of the experimental vector boson scattering (VBS) observation in the context of the Standard Model understanding at hadron colliders. The LHC accelerator complex and the ATLAS detector are described in detail, allowing the reader for a clear understanding of the collected data samples used in the study. The theory predictions are presented with care as well, so that the motivations of the analysis setup are clear and event selections well justified. Attention is devoted also to technical aspects often neglected in these reports, even when playing an important role in the success of a study, as for example the event processing speed.

The observation of the VBS in the final state characterised by the identification of four charged leptons and two jets in the ATLAS detector is then reported in the last part of the document. The adopted strategy in the study is well motivated and described; the candidate's contribution to high-profile publications of the ATLAS Collaboration is well outlined, as well as the novel techniques introduced in this document with respect to those published.

In summary, Ing. Ondrej Penc's PhD dissertation presents very well one of the most relevant recent results in the landscape of the LHC physics, fully meeting the goal set by the title of his work: the observation of the VBS process in this specific final state is a very solid starting point for the search of the long-sought longitudinally-polarised scattering of vector bosons, as outlined by the candidate himself in his concluding remarks.

Therefore, it's with no hesitation that I recommend this work for presentation and defence.

In faith,

