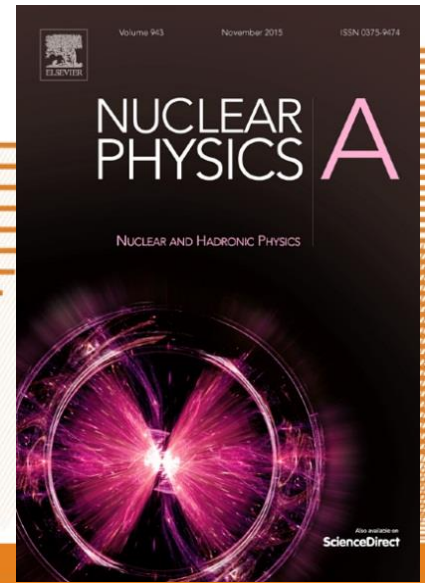




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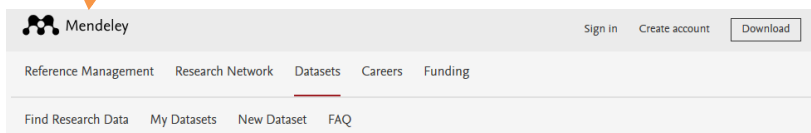
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SusHi Bento: Beyond NNLO and the heavy-top limit

Published: 10 Nov 2016 | **Version 1** | DOI: 10.17632/3bb3z4k9hp.1
 Contributor(s): Robert V. Harlander, Stefan Liebler, Hendrik Mantler

Description of this data

Version 1.6.0 of the code SusHi is presented. Concerning inclusive CP-even Higgs production in gluon fusion, the following new features with respect to previous versions have been implemented: expansion of the partonic cross section in the soft limit, i.e. around $\alpha_s^2 \text{MH}^2 \ll 1$; N³LO QCD corrections in terms of the soft expansion; top-quark mass suppressed terms through NNLO; matching to the cross section at $x=0$ through N³LO. For CP-even and -odd scalars, an efficient evaluation of the renormalization-scale dependence is included, and effects of dimension-5 operators can be studied, which we demonstrate for the SM Higgs boson and for a CP-even scalar with a mass of 750 GeV. In addition, as a generalization of the previously available $b\bar{b} \rightarrow H$ cross section, SusHi 1.6.0 provides the cross section for charged and neutral Higgs production in the annihilation of arbitrary heavy quarks. At fixed order in perturbation theory, SusHi thus allows to obtain Higgs cross-section predictions in different models to the highest precision known today. For the SM Higgs boson of $M_H=125\text{ GeV}$, SusHi yields 48.28 pb for the gluon-fusion cross section at the LHC at 13 TeV. Simultaneously, SusHi provides the renormalization-scale uncertainty of $\pm 1.97\text{ pb}$.

A previous version of this program (AEQY_v1_0) may be found at <http://dx.doi.org/10.1016/j.cpc.2013.02.006>.

Experiment data files

SusHi-1.6.0.tar.gz

Download all files (1)

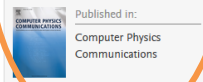
474 KB

Associated article

peer reviewed

This data is associated with the following peer reviewed publication:

SusHi Bento: Beyond NNLO and the heavy-top limit



Published in:

Computer Physics Communications

Latest version

Version 1 2016-11-10

Published: 2016-11-10
 DOI: 10.17632/3bb3z4k9hp.1

Peer reviewed dataset

Cite this dataset



ISSN: 2352-7110

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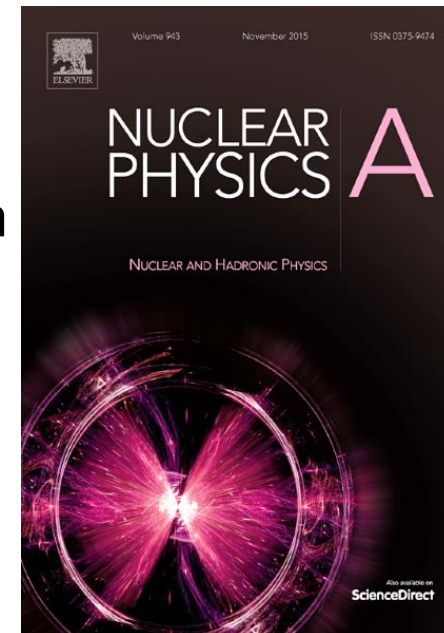
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Nuclear Physics A – Young Scientist Award

- To promote the work of young, up-and-coming nuclear and high energy physicists
- Awarded each year at Quark Matter to the best presentations in theory and experiment
- Winners receive a certificate and €750 prize

Thank you to the Selection committee!

- Mariapaola Lombardo
- Olga Evdokimov
- Julia Velkovska
- Peter Braun-Munzinger
- Enrico Scomparin
- Jacquelyn Noronha- Hostler
- Mateusz Ploskon
- Derek Teaney
- Roberto Preghenella
- Jiangyong Jia
- Urs Wiedemann
- Federico Antinori



... and the winners are:

Best experimental talks:

- **Barbara Trzeciak** (Utrecht University)

“Measurement of heavy-flavour correlations and jets with ALICE at the LHC”

- **Michael Knichel** (CERN)

“Analysis of the apparent nuclear modification in peripheral 5.02 TeV Pb-Pb collisions with ALICE”

Best theory talks:

- **Violetta Sagun** (Centro Multidisciplinar de Astrofísica)

“Neutron stars meet constraints from high and low energy nuclear physics”

- **Yang Ting Chen** (MIT)

“Probing heavy ion collisions using quark and gluon jet substructure with machine learning”