

PHENOLNF: PHENOMENOLOGY OF FUNDAMENTAL INTERACTIONS AT PRESENT AND FUTURE COLLIDERS

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The research topics investigated within the PHENOLNF project can be split into two main fields:

I) Flavour physics and physics beyond the Standard Model

(G. Corcella and G. Isidori);

II) Theoretical and phenomenological aspects of QCD at colliders

(G. Bevilacqua, G. Corcella, V. Del Duca and G. Pancheri).

Some of the main projects completed in 2015 and the relevant publications are listed below.

I) Flavour physics and physics beyond the Standard Model

1. G. Corcella, *Phenomenology of supersymmetric Z decays at the Large Hadron Collider*, Eur. Phys. J. C75 (2015), 264.
2. G. Giudice, G. Isidori, A. Salvio and A. Strumia, *Softened Gravity and the Extension of the Standard Model up to Infinite Energy*, JHEP 1502 (2015) 137.
3. M. Gonzalez-Alonso, G. Isidori and D. Marzocca, *Pseudo-observables in Higgs decays*, Eur. Phys. J. C75 (2015) 128.
4. M. Gonzalez-Alonso, G. Isidori and D. Marzocca, *Electroweak bounds on Higgs pseudo-observables and $h \rightarrow 4\ell$ decays*, Eur. Phys. J. C75 (2015) 341.
5. A. Greljo, G. Isidori and D. Marzocca, *On the breaking of Lepton Flavor Universality in B decays*, JHEP 1507 (2015) 142.
6. M. Bordone, A. Greljo, G. Isidori, D. Marzocca and A. Pattori, *Higgs Pseudo Observables and Radiative Corrections*, Eur. Phys. J. C75 (2015) 385.
7. I. Brivio, F. Goertz and G. Isidorim *Probing the Charm Quark Yukawa Coupling in Higgs+Charm Production*, Phys. Rev. Lett. 115 (2015).
8. L. Di Luzio, G. Isidori and G. Ridolfi, *Stability of the electroweak ground state in the Standard Model and its extensions*, Phys. Lett. B753 (2016) 150.
9. R. Barbieri, G. Isidori, A. Pattori and F. Senia, *Anomalies in B-decays and U(2) flavour symmetry*, Eur. Phys. J. C76 (2016) 67.
10. A. Greljo, G. Isidori, J.M. Lindert and D. Marzocca, *Pseudo-observables in electroweak Higgs production*, Eur. Phys. J. C76 (2016) 158.
11. G. Corcella, *Supersymmetric Z' decays at the LHC*, PoS PLANCK2015 (2015) 027.

II) Theoretical and phenomenological aspects of QCD at colliders

1. G. Bevilacqua, H.B. Hartanto, M. Kraus and M. Worek *Top Quark Pair Production in Association with a Jet with Next-to-Leading-Order QCD Off-Shell Effects at the Large Hadron Collider*, Phys. Rev. Lett. 116 (2016).
2. V. Del Duca, G. Falcioni, L. Magnea and L. Vernazza, *Analyzing high-energy factorization beyond next-to-leading logarithmic accuracy*, JHEP 1502 (2015) 029.
3. V. Del Duca, C. Duhr, G. Somogyi, F. Tramontano and Z. Trócsányi, *Higgs boson decay into b-quarks at NNLO accuracy*, JHEP 1504 (2015) 036.

4. R. Bonciani, V. Del Duca, H. Frellesvig, J.M. Henn, F. Moriello and V.A. Smirnov, *Next-to-leading order QCD corrections to the decay width $H \rightarrow Z\gamma$* , JHEP 1508 (2015) 108.
5. G. Corcella, S. Forte et al, *The Standard Model from LHC to future colliders*, Eur. Phys. J. C75 (2015) 554.
6. G. Corcella, A. Andreazza et al, *What Next: White Paper of the INFN-CSN1*, Frascati Phys. Ser. 60 (2015) 1-302.
7. D.A. Fagundes, A. Grau, G. Pancheri, Y.N. Srivastava and O. Shekhovtsova, *Soft edge of hadron scattering and minijet models for the total and inelastic pp cross sections at LHC and beyond*, Phys. Rev. D91 (2015) 114011.
8. F. Cornet, C. A. Garcia Canal, A. Grau, G. Pancheri and S.J. Sciutto, *Photoproduction total cross section and shower development*, Phys. Rev. D92 (2015) 114011.