

Dinko Ferenček

Životopis

Osobni podaci

Ime Dinko
Prezime Ferenček
Datum rođenja 11. lip. 1983.
Mjesto rođenja Zagreb, Hrvatska
Državljanstvo Hrvatsko
Spol Muško
Bračni status Oženjen, 2 djece

Kontakt

Poštanska adresa Institut Ruđer Bošković
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Internetska stranica <https://cern.ch/ferencek/>
Elektronička pošta Dinko.Ferencek@irb.hr

Obrazovanje

- 2006.–2011. **Ph.D., Physics**, University of Maryland, SAD (mentor Prof. Sarah C. Eno)
Disertacija: [Search for Pair Production of First-Generation Scalar Leptoquarks in Proton-Proton Collisions at \$\sqrt{s} = 7\$ TeV](#)
- 2001.–2006. **mag. phys.** (originalno **dipl. ing. fizike**), Sveučilište u Zagrebu, Hrvatska
(mentor Prof. Mirko Planinić/ko-mentor Dr. Vuko Brigljević)
Diplomski rad: [Produkcija \$WZ\$ bosona u proton-proton sudarima na \$\sqrt{s} = 14\$ TeV](#)

Radno iskustvo

- Od svi. 2021. **Viši znanstveni suradnik**, Institut Ruđer Bošković, Zagreb, Hrvatska
CMS eksperiment na LHC-u na CERN-u
- Stu. 2015.–tra. 2021. **Znanstveni suradnik**, Institut Ruđer Bošković, Zagreb, Hrvatska
CMS eksperiment na LHC-u na CERN-u
- Ruj. 2011.–lis. 2015. **Poslijedoktorand**, Rutgers, The State University of New Jersey, SAD
CMS eksperiment na LHC-u na CERN-u
- Lip. 2007.–kol. 2011. **Asistent u istraživanju**, University of Maryland, SAD
CMS eksperiment na LHC-u na CERN-u
- Kol. 2006.–svi. 2007. **Asistent u nastavi**, University of Maryland, SAD
Physics 121: Fundamentals of Physics I

Publikacije

Kao član kolaboracije CMS, koautor sam više od 1000 recenziranih znanstvenih članaka objavljenih u međunarodnim znanstvenim časopisima¹. Niže se nalazi popis odabranih publikacija kojima sam dao značajan doprinos.

Odabrane publikacije

- 2024 CMS Collaboration, “Measurement of simplified template cross sections of the Higgs boson produced in association with W or Z bosons in the $H \rightarrow b\bar{b}$ decay channel in proton-proton collisions at $\sqrt{s} = 13$ TeV”, *Phys. Rev. D* **109** (2024) 092011, [arXiv:2312.07562](https://arxiv.org/abs/2312.07562)
- 2023 CMS Collaboration, “Search for a massive scalar resonance decaying to a light scalar and a Higgs boson in the four b quarks final state with boosted topology”, *Phys. Lett. B* **842** (2023) 137392, [arXiv:2204.12413](https://arxiv.org/abs/2204.12413)
- 2021 Ferenček D., Roguljić M., Starodumov A., “Production, calibration, and performance of the layer 1 replacement modules for the CMS pixel detector”, *Proceedings of The 29th International Workshop on Vertex Detectors (VERTEX2020)*, JPS Conf. Proc. **34** (2021) 010023
- 2020 Roguljić M., Starodumov A., Karadzhinova-Ferrer A., Ferenček D., Ahmed A. A., Jara-Casas L. M., “Low dose rate ^{60}Co facility in Zagreb”, *Proceedings of The 28th International Workshop on Vertex Detectors (VERTEX2019)*, PoS Vertex2019 (2020) 066
- 2019 Majer M., Roguljić M., Knežević, Ž., Starodumov A., Ferenček D., Brigljević V., Mihaljević B., “Dose mapping of the panoramic ^{60}Co gamma irradiation facility at the Ruđer Bošković Institute – Geant4 simulation and measurements”, *Appl. Radiat. Isot.* **154** (2019) 108824
- 2018 CMS Collaboration, “Identification of heavy-flavour jets with the CMS detector in pp collisions at 13 TeV”, *JINST* **13** (2018) P05011, [arXiv:1712.07158](https://arxiv.org/abs/1712.07158)
- 2017 CMS Collaboration, “Search for dijet resonances in proton-proton collisions at $\sqrt{s} = 13$ TeV and constraints on dark matter and other models”, *Phys. Lett. B* **769** (2017) 520, [arXiv:1611.03568](https://arxiv.org/abs/1611.03568)
- 2016 CMS Collaboration, “Search for narrow resonances in dijet final states at $\sqrt{s} = 8$ TeV with the novel CMS technique of data scouting”, *Phys. Rev. Lett.* **117** (2016) 3, 031802, [arXiv:1604.08907](https://arxiv.org/abs/1604.08907)
- 2016 CMS Collaboration, “Search for heavy resonances decaying to two Higgs bosons in final states containing four b quarks”, *Eur. Phys. J. C* **76** (2016) 371, [arXiv:1602.08762](https://arxiv.org/abs/1602.08762)
- 2015 CMS Collaboration, “Search for narrow resonances decaying to dijets in proton-proton collisions at $\sqrt{s} = 13$ TeV”, *Phys. Rev. Lett.* **116** (2016) 7, 071801, [arXiv:1512.01224](https://arxiv.org/abs/1512.01224)
- 2015 CMS Collaboration, “Search for pair-produced vector-like B quarks in pp collisions at $\sqrt{s} = 8$ TeV”, *Phys. Rev. D* **93** (2016) 112009, [arXiv:1507.07129](https://arxiv.org/abs/1507.07129)
- 2015 CMS Collaboration, “Search for vector-like T quarks decaying to top quarks and Higgs bosons in the all-hadronic channel using jet substructure”, *JHEP* **06** (2015) 080, [arXiv:1503.01952](https://arxiv.org/abs/1503.01952)
- 2015 CMS Collaboration, “Search for resonances and quantum black holes using dijet mass spectra in proton-proton collisions at $\sqrt{s} = 8$ TeV”, *Phys. Rev. D* **91** (2015) 052009, [arXiv:1501.04198](https://arxiv.org/abs/1501.04198)

¹Izvor: Baza podataka INSPIRE-HEP <https://inspirehep.net>

- 2014 CMS Collaboration, “Search for pair-produced resonances decaying to jet pairs in proton-proton collisions at $\sqrt{s} = 8$ TeV”, *Phys. Lett. B* **747** (2015) 98, [arXiv:1412.7706](#)
- 2013 CMS Collaboration, “Search for narrow resonances and quantum black holes in inclusive and b-tagged dijet mass spectra from pp collisions at $\sqrt{s} = 7$ TeV”, *JHEP* **01** (2013) 013, [arXiv:1210.2387](#)
- 2011 CMS Collaboration, “Search for First Generation Scalar Leptoquarks in the $evjj$ Channel in pp Collisions at $\sqrt{s} = 7$ TeV”, *Phys. Lett. B* **703** (2011) 246, [arXiv:1105.5237](#)
- 2011 CMS Collaboration, “Missing transverse energy performance of the CMS detector”, *JINST* **6** (2011) 09001, [arXiv:1106.5048](#)
- 2011 CMS Collaboration, “Search for Pair Production of First-Generation Scalar Leptoquarks in pp Collisions at $\sqrt{s} = 7$ TeV”, *Phys. Rev. Lett.* **106** (2011) 201802, [arXiv:1012.4031](#)
- 2007 V. Brigljević et. al., “Study of di-boson production with the CMS detector at LHC”, *J. Phys. G* **34** (2007) N269-N295

Publikacije kolaboracije CMS²

- 2016 CMS Collaboration, “Searches for narrow resonances decaying to dijets in pp collisions at $\sqrt{s} = 13$ TeV using 12.9 fb⁻¹”, *CMS Physics Analysis Summary* **EXO-16-032**
- 2016 CMS Collaboration, “Identification of double-b quark jets in boosted event topologies”, *CMS Physics Analysis Summary* **BTV-15-002**
- 2016 CMS Collaboration, “Identification of b quark jets at the CMS Experiment in the LHC Run 2”, *CMS Physics Analysis Summary* **BTV-15-001**
- 2015 CMS Collaboration, “Search for Narrow Resonances using the Dijet Mass Spectrum with 42 pb⁻¹ of pp Collisions at $\sqrt{s} = 13$ TeV”, *CMS Physics Analysis Summary* **EXO-15-001**
- 2015 CMS Collaboration, “First Results from Dijet Resonance Search using 37 pb⁻¹ of proton-proton collisions at $\sqrt{s} = 13$ TeV”, *CMS Detector Performance Summary* **DP-2015-017**
- 2013 CMS Collaboration, “Search for pair-produced vector-like quarks of charge $-1/3$ in lepton+jets final state in pp collisions at $\sqrt{s} = 8$ TeV”, *CMS Physics Analysis Summary* **B2G-12-019**
- 2013 CMS Collaboration, “Performance of b tagging at $\sqrt{s} = 8$ TeV in multijet, $t\bar{t}$ and boosted topology events”, *CMS Physics Analysis Summary* **BTV-13-001**
- 2013 CMS Collaboration, “Search for Heavy Resonances Decaying into $b\bar{b}$ and bg Final States in pp Collisions at $\sqrt{s} = 8$ TeV”, *CMS Physics Analysis Summary* **EXO-12-023**
- 2012 CMS Collaboration, “Search for b-jet Resonances in pp Collisions at $\sqrt{s} = 7$ TeV”, *CMS Physics Analysis Summary* **EXO-11-008**
- 2010 CMS Collaboration, “Performance of Missing Transverse Energy Reconstruction in $\sqrt{s} = 900$ and 2360 GeV pp Collision Data”, *CMS Physics Analysis Summary* **JME-10-002**
- 2009 CMS Collaboration, “Offset Energy Correction for Cone Jets”, *CMS Physics Analysis Summary* **JME-09-003**

²Interno recenzirane i dostupne na <https://cdsweb.cern.ch/collection/CMS>

Međunarodne kolaboracije

Od 2006. Kolaboracija CMS na CERN-u

Članstva i ostale profesionalne aktivnosti

Od 2024. Hrvatski predstavnik u Plenarnom i Zatvorenom Europskom vijeću za buduće akceleratorne (ECFA)

Od velj. 2024. Recenzent znanstvenih radova za časopis *Journal of Physics G* (akreditiran kao IOP Trusted Reviewer)

Od ožu. 2018. Vrednovatelj godišnjih izvještaja projekata Hrvatske zaklade za znanost
2022. *ERC Remote Referee* vrednovatelj u sklopu natječaja ERC-2022-STG

Ožu. 2021.–Svi. 2022. Vrednovatelj godišnjih izvještaja projekata Sveučilišta u Rijeci

Tra. 2016.–lip. 2021. Hrvatsko fizikalno društvo

Velj. 2011.–tra. 2016. Američko fizikalno društvo

Organizacija međunarodnih skupova i radionica

30. ruj.–4. lis. 2024. Član organizacijskog odbora za konferenciju *LHC Days in Split/Hvar*, Hvar, Hrvatska
Predsjedao tematskom cjelinom “BSM: Part 1”

14.–16. srp. 2023. Član organizacijskog odbora za radionicu *HHH Workshop*, Dubrovnik, Hrvatska

3.–8. lis. 2022. Član organizacijskog odbora za konferenciju *LHC Days in Split 2022*, Split, Hrvatska

30. svi.–3. lip. 2022. Član lokalnog organizacijskog odbora za radionicu *Higgs Pairs Workshop 2022*, Dubrovnik, Hrvatska

13.–18. lis. 2019. Član lokalnog organizacijskog odbora za radionicu *The 28th International Workshop on Vertex Detectors*, Lopud, Hrvatska
Predsjedao tematskom cjelinom “Tracking and vertexing”

30. tra.–3. svi. 2019. Član lokalnog organizacijskog odbora za radionicu *Game of Flavours - CMS Heavy Flavour Tagging Workshop 2019*, Dubrovnik, Hrvatska
Predsjedao tematskom cjelinom “CMS-only sessions: Infrastructure”

17.–22. ruj. 2018. Član organizacijskog odbora za konferenciju *LHC Days in Split 2018*, Split, Hrvatska
Predsjedao tematskom cjelinom “Higgs boson physics: Part 2”

11.–13. tra. 2018. Član organizacijskog odbora za radionicu *CMS Heavy Flavour Tagging Workshop 2018*, Bruxelles, Belgija
Predsjedao tematskom cjelinom “Boosted topologies and jet substructure”

Predavanja, seminari i poster

31. srp. 2024. “Experimental perspective”, Mini workshop on HHH and other extended scalar sector signatures, Zagreb, Hrvatska

21. velj. 2024. “CMS and NA61 activities in Zagreb”, CROHEP Meeting, Zagreb, Hrvatska

10. lis. 2020. “Production, calibration and performance of the layer 1 replacement modules for the CMS pixel detector”, Poster na VERTEX 2020: The 29th International Workshop on Vertex Detectors (online)

27. velj. 2020. "Machine Learning in High Energy Physics", Seminar Znanstvenog centra izvrsnosti za znanost o podatcima i kooperativne sustave ACROSS–DataScience, Zagreb, Hrvatska
9. pro. 2019. "CMS activities in Zagreb", CROHEP Meeting, Zagreb, Hrvatska
16. lis. 2018. "Status report for Research Area 4: Multidisciplinary Data Intensive Applications, 4.1 Particle physics and astrophysics", 3rd International Workshop on Data Science, Zagreb, Hrvatska
16. lis. 2018. "Usage of Deep Neural Networks to Tag Boosted Higgs Bosons Decaying into Bottom Quarks", Poster na the 3rd International Workshop on Data Science, Zagreb, Hrvatska
17. ruj. 2018. "Double Higgs boson searches overview", LHC Days in Split, Split, Hrvatska
13. tra. 2018. "Status of the double-b tagger", CMS Heavy Flavour Tagging Workshop 2018, Bruxelles, Belgija
13. lis. 2017. "Potraga za teškim rezonancijama i tamnom materijom pomoću hadronskih mlazova na LHC-u", pozvano predavanje na 10. znanstvenom sastanku Hrvatskog fizikalnog društva, Baška, Otok Krk, Hrvatska
30. stu. 2016. Poster "Machine Learning in High Energy Physics", First International Workshop on Data Science, Zagreb, Hrvatska
19. srp. 2016. "Identification of b jets in boosted event topologies with CMS", BOOST2016, Zürich, Švicarska
15. tra. 2015. "Multijet Searches at the LHC: Run 1 Highlights and Prospects for Run 2", UMD HEP Seminar, College Park, MD, SAD
5. stu. 2014. "Boosted Higgs and b-tagging and other tools/techniques", BSM Higgs Workshop @ LPC, Fermilab, SAD
19. kol. 2014. "CMS b and quark/gluon tagging", BOOST2014, University College London, London, Velika Britanija
3. i 24. lis. 2013. "b Tagging in Boosted Event Topologies (Parts I and II)", High Energy Experimental Seminar, Rutgers, The State University of New Jersey, Department of Physics & Astronomy, Piscataway, NJ, SAD
26. ruj. 2013. "Top/Higgs Tagging at the LHC", LPC Workshop on Exotic Top Partners, Fermilab, SAD
12. stu. 2012. "LHC Searches with Jets and Photons", Chicago 2012 Workshop on LHC Physics, Chicago, IL, SAD
6. ruj. 2012. "Search for Physics Beyond the Standard Model in Fully Hadronic Final States with the CMS Detector at the LHC", Seminar Zavoda za eksperimentalnu fiziku, Institut Ruđer Bošković, Zagreb, Hrvatska
11. srp. 2012. "Latest Exotica Results with Jets in the Final State from the CMS Experiment", Santa Fe 2012 Summer Workshop "LHC Now", Santa Fe, NM, SAD
19. ožu. 2012. "Hadronic Exotica Searches at CMS", SEARCH Workshop, College Park, MD, SAD
9. lip. 2011. "Search for Pair Production of First-Generation Scalar Leptoquarks with the CMS Experiment at CERN", High Energy Physics Seminar, Johns Hopkins University, Department of Physics & Astronomy, Baltimore, MD, SAD
31. svi. 2011. "Search for Pair Production of First-Generation Scalar Leptoquarks with the CMS Experiment at CERN", High Energy Experimental Seminar, Rutgers, The State University of New Jersey, Department of Physics & Astronomy, Piscataway, NJ, SAD

- 1. svi. 2011. “Search for Pair Production of First-Generation Scalar Leptoquarks in pp Collisions at $\sqrt{s} = 7$ TeV”, APS April Meeting, Anaheim, CA, SAD
- 30. lis. 2010. “Results of a Search for Pair Production of First-Generation Scalar Leptoquarks in pp Collisions at $\sqrt{s} = 7$ TeV”, USLUO Annual Meeting, Fermilab, SAD

Projekti i priznanja

- 18. ruj. 2023.–17. ruj. 2027. Član [COST akcije CA22130 - Comprehensive Multiboson Experiment-Theory Action \(COMETA\)](#) i zamjenski predstavnik Hrvatske u Upravnom odboru akcije
- Svi. 2019.–ožu. 2023. Mentor na projektu Hrvatske zaklade za znanost DOK-01-2018 “Projekt razvoja karijera mladih istraživača - izobrazba novih doktora znanosti”, doktorand: Saswat Mishra
- Lip. 2017.–kol. 2022. Suradnik na projektu Hrvatske zaklade za znanost IP-2016-06-3321 “Sto dvadeset i pet milijuna piksela za otkriće vezanja Higgsovog bozona na fermione i novih čestica na Velikom hadronskom sudarivaču”, voditelj: dr. sc. Vuko Brigljević
- 17. pro. 2019. Zajedno s kolegama Benjaminom Mesićem, Tatjanom Šušom i Vukom Brigljevićem među dobitnicima godišnje nagrade za najbolje znanstvene radove zaposlenika IRB-a u 2018. godini za znanstveni rad “Observation of Higgs boson decay to bottom quarks”, *Phys. Rev. Lett.* **121** (2018) 12, 121801, [arXiv:1808.08242](#)
- 3. svi. 2019. Financijska potpora Ministarstva znanosti i obrazovanja za prijave na kompetitivne projekte na osnovu prijave na natječaj H2020-MSCA-IF-2018 (Ukupni iznos: 25 000 kn)
- 2017.–2018. Glavni istraživač s hrvatske strane na bilateralnom francusko-hrvatskom znanstveno-istraživačkom projektu u sklopu Programa integriranih akcija “Cogito” za 2017.–2018. pod nazivom “**ABC: Advance B** tagging in CMS”
- 25. tra. 2018. Financijska potpora Ministarstva znanosti i obrazovanja za prijave na kompetitivne projekte na osnovu prijave na natječaj H2020-MSCA-IF-2017 (Ukupni iznos: 40 000 kn)
- 5. ožu. 2018. “Pečat izvrsnosti” (Seal of Excellence) za projektni prijedlog poslan na Marie Skłodowska-Curie Actions natječaj H2020-MSCA-IF-2017 (Ukupna ocjena: 92.80%)
- Lis. 2017. Donacija grafičke kartice Titan Xp u sklopu [NVIDIA GPU Grant](#) programa za razvoj novih algoritama za b-označavanje baziranim na modernim metodama strojnog učenja
- 24. tra. 2017. Financijska potpora Ministarstva znanosti i obrazovanja za prijave na kompetitivne projekte na osnovu prijave na natječaj H2020-MSCA-IF-2016 (Ukupni iznos: 25 624 kn)
- 24. tra. 2017. “Pečat izvrsnosti” (Seal of Excellence) za projektni prijedlog poslan na Marie Skłodowska-Curie Actions natječaj H2020-MSCA-IF-2016 (Ukupna ocjena: 89.20%)
- Tra. 2011. Primio DPF Student Travel Award za odlazak na APS April Meeting
- Lis. 2007. Primio pohvalnicu u sklopu Ralph Myers Teaching Award za izvrsnost u nastavi u akademskoj godini 2006.–2007.
- 2002.–2006. Stipendija Ministarstva znanosti, obrazovanja i sporta za nadarene studente
- 2005. Stipendija Ministarstva znanosti, obrazovanja i sporta za pohađanje ljetne škole CERN Summer Student Programme

Škole i radionice

- 14.–18. lip. 2021. Pohađao školu 8th Thematic CERN School of Computing održanu u online formatu, tema škole bila je *Scientific Software for Heterogeneous Architectures*
- 25.–29. ruj. 2017. Pohađao radionicu 2nd International Summer School on Data Science (SSDS 2017), Split, Hrvatska
- 18.–22. srp. 2016. Pohađao radionicu BOOST2016: 8th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches, Zürich, Švicarska
- 10.–14. kol. 2015. Pohađao radionicu BOOST2015: 7th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches, Chicago, IL, SAD
- 18.–22. kol. 2014. Pohađao radionicu BOOST2014: 6th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches, London, Ujedinjeno Kraljevstvo
- 11.–16. kol. 2013. Pohađao radionicu BOOST2013: 5th International Workshop on Boosted Object Phenomenology, Reconstruction and Searches, Flagstaff, AZ, SAD
- 8.–16. kol. 2008. Pohađao ljetnu školu CTEQ-MCnet Summer School on QCD Phenomenology and Monte Carlo Event Generators, Debrecen, Mađarska
- Ljeto 2005. Pohađao ljetnu školu na CERN-u

Iskustvo u nastavi i mentoriranju

- 2018., 2020., 2022., Predavao poglavlje “Introduction to MVA Methods” u sklopu kolegija [Metode statističke analize i raspoznavanja uzoraka s primjenama u fizici čestica](#) na doktorskom studiju fizike na PMF-FO Sveučilišta u Zagrebu (nositelj kolegija: Izv. prof. dr. sc. Vuko Brigljević)
- 2024.
- Lip. 2019.–27. ožu. Mentorirao doktoranda Saswata Mishru, PMF-FO, Sveučilište u Zagrebu
2023. Doktorski rad: [Mjerenje udarnog presjeka za zajedničku tvorbu Higgsovog bozona i elektroslabog bozona u konačnim stanjima s dva b kvarka i dva leptona u proton proton sudarima na Velikom hadronskom sudarivaču](#)
- Jesen 2021. U sklopu Jesenskih studentskih projekata na ZEF-u, mentorirao dodiplomskog studenta Lovru Dulibića na projektu pod nazivom “Produkcija tripleta Higgsovih bozona na Velikom hadronskom sudarivaču”
- Jesen 2021. U sklopu Jesenskih studentskih projekata na ZEF-u, zajedno s Tatjanom Šušom komentorirao dodiplomsku studenticu Noru Miljanić na projektu pod nazivom “CMS piksel detektor”
24. ruj. 2021. Mentorirao Laru Čalić, **mag. phys.**, Odjel za fiziku, Sveučilište u Rijeci
- Diplomski rad: [Produkcija tripleta Higgsovih bozona na Velikom hadronskom sudarivaču](#)
- Stu. 2017.–ruj. Mentorirao doktoranda Mateja Roguljića (zbog značajnije uključenosti u analizu, mentorstvo prebačeno na kolegu iz laboratorija Devdattu Majumdera; preuzeo ulogu neslužbenog komentora do Matejeve obrane u kolovozu 2022.)
- 2020.
- Jesen 2018. U sklopu Jesenskih studentskih projekata na ZEF-u, mentorirao dodiplomskog studenta Jurja Ovčara na projektu pod nazivom “Studija prolaska snopa iona kroz Token Bit Manager modula CMS piksel detektora”
- Jesen 2017. U sklopu Jesenskih studentskih projekata na ZEF-u, zajedno s Andreyem Starodumovim komentorirao dodiplomskog studenta Ariana Iveca na projektu pod nazivom “Proučavanje svojstava Readout Chipa CMS piksel detektora”

14. srp. 2017. Mentorirao Mateja Roguljića, **mag. phys.**, PMF-FO, Sveučilište u Zagrebu
Diplomski rad: [Razvoj algoritma za identifikaciju hadronskih mlazova nastalih raspadom ultrarelativističkih Higgsovih bozona u dva b kvarka korištenjem nadograđenog CMS piksel detektora](#)
8. srp. 2016. Mentorirao Luciju Bajan, **mag. phys.**, PMF-FO, Sveučilište u Zagrebu
Diplomski rad: [Potraga za rezonancijama u konačnim stanjima s dva hadronska mlaza na masama ispod 1 TeV u proton-proton sudarima na energiji centra mase od 13 TeV na Velikom hadronskom sudarivaču](#)
- 2011.–2015. Kao poslijedoktorand na Sveučilištu Rutgers, nadgledao na dnevnoj bazi nekoliko dodiplomskih studenata i doktoranada

Mediji i popularizacija znanosti

20. i 22. velj. 2024. Mentor i predavač u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
3. stu. 2023. Mentor i predavač u sklopu posebnog “CMS Masterclasses” događaja organiziranog za nastavnike fizike iz srednjih škola na Institutu Ruđer Bošković u Zagrebu
25. lis. 2023. Član okruglog stola za fiziku na WISE (WorkIn’ Science) danu karijera na PMF-u Sveučilišta u Zagrebu
9. svi. 2023. Mentor i predavač u sklopu posebnog “CMS Masterclasses” događaja organiziranog za nastavnike fizike iz srednjih škola na Institutu Ruđer Bošković u Zagrebu
21. i 22. ožu. 2023. Mentor i predavač u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu. Prilog u središnjem dnevniku HRT-a 22. ožu. 2023.
15. i 17. ožu. 2022. Mentor i predavač u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
30. stu. 2021. Prilog u emisiji “Znanstveni krugovi” na HRT-u pod naslovom “CMS piksel detektor”
28. lip. 2020. Izjava za novinski članak “[Superudarač od 100 km](#)” u Večernjem listu
2. i 4. ožu. 2020. Mentor i predavač u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
- 16.–19. tra. 2019. Suorganizator i vodič tijekom posjeta zagrebačkih studenata fizike CERN-u
25. velj. i 11. ožu. 2019. Mentor i predavač u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
29. lis. 2018. Gost u emisiji “Okrugli stol ponedjeljkom” na Hrvatskom radiju 3
10. lis. 2018. Gost u emisiji “Drag mi je Platon” na Hrvatskom radiju 1
9. lis. 2018. Prilog u emisiji “Znanstveni krugovi” na HRT-u pod naslovom “Od bozona do b kvarka”
8. svi. 2018. Intervju uživo iz kontrolne sobe detektora CMS smještene na LHC Point 5 s učenicima iz Osnovne škole Stjepana Radića u Brestovcu Orehovičkom
19. ožu. 2018. Mentor u sklopu “[Međunarodnog istraživačkog dana \(International Masterclasses – Hands on Particle Physics\)](#)” održanog u Prvoj gimnaziji Varaždin

20. velj. 2018. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
7. lis. 2017. Panelist na simpoziju organiziranom u sklopu festivala moderne umjetnosti Touch Me Festival 2017: The Invisible Around Us održanom u Zagrebu
- 27.–28. tra. 2017. Vodič tijekom posjeta zagrebačkih studenata fizike CERN-u
27. tra. 2017. Prilog u emisiji “Treći element: Dimenzije prostora i materije” na HRT-u
3. tra. 2017. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” održanog za učenike Biskupijske klasične gimnazije Ruđera Boškovića s pravom javnosti na Sveučilištu u Dubrovniku
24. ožu. 2017. “Tamna strana zvjezdanog neba (i može li nam ju LHC rasvijetliti)”, Gradska knjižnica i čitaonica Virovitica
24. ožu. 2017. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” održanog u Gimnaziji Petra Preradovića u Virovitici
10. i 31. ožu. 2017. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
14. svi. 2016. “Tamna strana zvjezdanog neba i kako nam ju LHC može obasjati”, Otvoreni dan na Institutu Ruđer Bošković u Zagrebu
25. ožu. 2016. “Busy bees”, Fermilab at Work
14. ožu. 2016. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” održanog u Gimnaziji Požega
19. velj. 2016. Mentor i predavač u sklopu “Međunarodnog istraživačkog dana (International Masterclasses – Hands on Particle Physics)” za učenike srednjih škola održanog na Institutu Ruđer Bošković u Zagrebu
15. velj. 2016. “Looking for signs: dijet resonances”, Fermilab at Work
- 23.–24. stu. 2015. Vodič tijekom posjeta zagrebačkih studenata fizike CERN-u
2. tra. 2015. “Dinko Ferencek (Ph.D. ’11, Physics) Talks Particle Physics”, UMD CMNS News
30. sij. 2015. “One measurement, many implications”, Fermilab Today, Frontier Science Result: CMS
17. sij. 2013. “A Search for ‘God particle’: A Story of Unification”, Hrvatska ura, Veleposlanstvo Republike Hrvatske u SAD, Washington, DC, SAD
25. velj. 2011. “First supersymmetry results from the LHC”, Fermilab Today, CMS Result
11. velj. 2011. “CMS joins the hunt for leptoquarks”, Fermilab Today, CMS Result of the Month
29. tra. 2010. Vodič tijekom posjeta hrvatskih studenata fizike CMS Analysis Centeru na CERN-u
19. lip. 2009. Održao predavanje “Welcome o CERN” za grupu studenata strojarstva iz Zagreba u posjetu CERN-u
1. svi. 2009. Vodič tijekom posjeta zagrebačkih studenata fizike detektoru CMS na CERN-u

Računalne vještine

Operativni sustavi	Iskustvo s administriranjem Linux i Microsoft Windows operativnih sustava
Uredski alati	L ^A T _E X, LibreOffice/OpenOffice, Microsoft Office
Programski jezici	C/C++, Python, osnovno poznavanje Fortrana na razini čitanja koda, osnovno iskustvo sa shell skriptama
Version control	Iskustvo sa CVS, SVN i Git alatima

Alati za analizu ROOT, TMVA, Mathematica

Jeziči

Hrvatski Materinji

Engleski Iskusni korisnik u pisanju, čitanju i govoru

Radno iskustvo unutar kolaboracije CMS (na engleskom)

- ARC Duties Served as an ARC member for HIN-12-003, EXO-12-042, JME-13-002, EXO-13-008, B2G-14-002, HIN-14-007, B2G-14-001, JME-14-002, HIN-15-012, B2G-16-003 (ARC Chair), JME-16-003, EXO-16-045 (ARC Chair), B2G-17-009, EXO-17-011, B2G-17-004 (ARC Chair), EXO-17-019, HIN-18-002, FTR-18-004, EXO-18-011, HIG-18-027, TOP-18-012, SMP-18-013, HIG-19-017, B2G-19-005, B2G-19-002 (ARC Chair), B2G-20-011 (ARC Chair), TOP-22-010
- As part of the HIN-12-003 review, proposed a novel trigger combination algorithm that minimizes the statistical uncertainties for data collected using several prescaled triggers. The algorithm has later been used in HIN-14-007 and HIN-15-012
- Editorial Duties Served as the editor for the combined EXO-11-094 + EXO-11-008 [paper](#)
- CWR Institutional Reviews Contributed to the Institutional Review of HIG-11-027, BTV-12-001, EXO-12-016, BPH-13-004, HIG-13-004, HIG-13-021, SUS-13-019, HIG-13-024, EXO-12-053, B2G-16-013, HIN-16-006, B2G-17-005, EXO-19-004, SUS-19-013, B2G-21-004
- Since Oct. 2020 Serving as a L3 co-convenor of the Pixel Calibration & Local Reconstruction group
- Since Jun. 2019 Involved in a measurement of the VHbb process using the full Run 2 data (HIG-20-001)
- Jul. 2017–Sep. 2020 Involved in quality assurance of CMS pixel modules with the goal of building and testing modules for a replacement of the innermost layer of the Phase-1 CMS pixel detector. Work done in close collaboration with colleagues from Paul Scherrer Institute, ETH Zürich and Helsinki Institute of Physics.
- Jan. 2015–Mar. 2020 Served as RECO and PAT contact for the BTV POG
- Oct. 2016–Dec. 2019 Served as EOS space manager for the Exotica PAG
- Developed a set of software tools for managing the EXO EOS space at CERN (<https://gitlab.cern.ch/ferencek/ExoEosTools>)
- Dec. 2018–Oct. 2019 Involved in the design, construction and operation of a test setup built at the ^{60}Co irradiation facility at RBI for low dose-rate irradiation of the RD53A readout chip prototype for pixel detectors at the HL-LHC. Work done in close collaboration with colleagues from CERN.
- Proposed the original idea of developing a simulation of the ^{60}Co irradiation facility based on the Geant4 package that was extensively used in the design phase of the test setup. The simulation was validated against experimental measurements of the absorbed dose using ethanol-chlorobenzene dosimeters
 - One of my main tasks was the design and construction of an uninterrupted dry air supply for the test setup
- Sep. 2012–Jun. 2019 Made key contributions to the development and commissioning of subset b tagging used in Higgs and top tagging algorithms employed in searches for new physics in boosted event topologies. Also made key contributions to the development and commissioning of double-b tagging algorithm used for Higgs tagging.

- Mar. 2018–Apr. 2019 Participated in several beam test campaigns at the Tandem Van de Graaff accelerator at RBI to study single event upsets in the Token Bit Manager chip of the CMS pixel detector module
- Developed software tools for running the data acquisition chain and catching single event upsets (<https://gitlab.cern.ch/CMS-IRB/PixelTools>)
- May 2016–Nov. 2018 Served as a Pixel Tracker Detector On-Call (Pixel DOC) expert shifter
- Jul. 2014–Jun. 2017 Involved in a search for dijet resonances in pp collisions at $\sqrt{s} = 13$ TeV
- Jan. 2016–Aug. 2016 Served as a L3 co-convener of the Exotica Jets+X Working Group (successor of the Multijets Working Group)
- Oct. 2014–Dec. 2015 Served as a L3 co-convener of the Exotica Multijets Working Group
- Apr. 2012–Jul. 2016 Maintained a “bump hunt” limit setting tool used in Exotica dijet analyses for setting Bayesian upper limits (more information available at <https://twiki.cern.ch/twiki/bin/view/CMS/DijetLimitCode>)
- Jul. 2015 Prepared and led the *b*-tagging HATS@LPC held at Fermilab, USA
- Jan. 2015 Prepared and led the *b* tagging and *EXO Dijet Resonances* exercises at the CMS Data Analysis School 2015 held at Fermilab, USA
- Jan. 2013–Dec. 2014 Served as a L3 co-convener of the BTV POG Algorithms and Software Subgroup
- Maintained b-tagging software framework and documentation, served as RECO and PAT contact and was in charge of code integration
 - Contributed to studies of the b-tagging performance in the context of CMS detector upgrades for the HL-LHC
 - Made key contributions to the rewriting of the b-tagging software framework as part of the CMS preparations for LHC Run 2, making it possible to run b-tagging algorithms from a reduced event data format and retaining the same level of flexibility as in Run 1
 - Developed jet flavor definition based on the *ghost association* of generator-level hadrons/partons to reconstructed jets which is now the default jet flavor definition at CMS (more information available at <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideBTagMCTools>)
 - Wrote extensive documentation on applying b-tagging efficiency scale factors to simulated events (more information available at <https://twiki.cern.ch/twiki/bin/viewauth/CMS/BTagSFMMethods>)
- Sep. 2012–Sep. 2013 Involved in a search for vector-like bottom quark partners in single-lepton final states (B2G-12-019)
- Aug. 2012–Dec. 2014 Involved in a search for paired dijets (EXO-12-052)
- Dec. 2011–Dec. 2013 Served as a b-tagging object expert for the Exotica PAG and an Exotica PAG contact person for the BTV POG
- Sep. 2011–Apr. 2013 Designed and carried out a search for b-jet resonances in pp collisions at $\sqrt{s} = 7$ TeV (EXO-11-008) and remained involved in a related search at $\sqrt{s} = 8$ TeV (EXO-12-023)
- Jan. 2011 Prepared and led the *MET and High-MET Event Scan Exercise* at the CMS Data Analysis School 2011 held at Fermilab, USA

- 2009–2011 Involved in a search for pair production of first-generation scalar leptoquarks in $eejj$ and $e\nu jj$ channels
 - Actively contributed to development of software analysis tools
 - Acquired extensive experience with the Physics Analysis Toolkit (PAT)
 - Experience with producing private Monte Carlo samples and preparing generator card files for the official Monte Carlo production
 - Experience with all steps of the analysis, from ntuple making to producing final limit plots
 - Performed optimization of the final event selection criteria
 - Presented [pre-approval talk](#) for the $e\nu jj$ channel analysis
- 2010–2011 Involved in a scan of high-MET events
 - From Jan. to May 2011, coordinated a high-MET event scan effort within the MET Working Group (more information available at <https://twiki.cern.ch/twiki/bin/view/CMS/MissingETScanners>)
- Nov. 2009–Sep. 2010 Developed and maintained a JetMET history DQM tool (more information available at <https://twiki.cern.ch/twiki/bin/view/CMS/JetMETHistoryDQM>)
- Feb. 2009–Jul. 2010 Based at CERN performing the following HCAL service work activities:
 - Responsible for HCAL pedestal tuning
 - Worked on HCAL DQM code development
 - HCAL test beam 2009: worked on wire chamber calibration and was in charge of setting up the test beam DQM (<https://twiki.cern.ch/twiki/bin/view/CMS/TestBeam2009>, <https://indico.cern.ch/event/65028/contribution/2/material/slides/0.pdf>)
 - During the last 12 months at CERN served as one of the on-call HCAL operations experts
 - During the last 4 months at CERN served as one of the HCAL Prompt Feedback Group contacts
 - In Jun. 2010, served as an HCAL Operations Coordinator
 - Within the HCAL Noise Task Force, worked as one of the main developers of the HF noise cleaning algorithms later included in the standard event reconstruction
- Late 2009–Early 2010 Contributed to MET commissioning studies with first collision data at $\sqrt{s} = 900$ and 2360 GeV
- Aug. 2009–End of 2009 Worked on DataMixer validation (more information available at <https://twiki.cern.ch/twiki/bin/view/CMS/DataMixerValidation>)
- Summer 2008–End of 2009 Worked on the offset (L1) jet energy correction (more information available at <https://twiki.cern.ch/twiki/bin/view/CMS/OffsetCorrection>)
 - Presented [pre-approval](#) and [approval](#) talks for the JME-09-003 analysis

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