Research Output

Selected list of publication

In the following the selected list of publications, i.e. consisting of publications where I gave significant contribution, is shown. The full list of roughly 650 publications can be found at https://inspirehep.net/authors/1043163?ui-citation-summary=true. The importance of each paper is briefly summarized. For long-author papers (i.e. papers of large experimental collaborations) my individual contribution is described. Conference proceedings are not included, unless original unpublished work was shown at the conference and the corresponding proceeding is published in peer-reviewed journals. All publications are listed in order of importance.

Analysis Papers

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Measurement of Form-Factor-Independent Observables in the Decay* $B^0 \to K^{*0}\mu^+\mu^-$*"*, Phys.Rev.Lett. 111 (2013). First rare decays anomaly to be measured. I was the main author. I invented the *folding* method that made this analysis possible and led the measurement. All the analysis was done by me and a Ph.D. student I supervised.

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Test of lepton universality in beauty quark decays"*, arXiv:2103.11769 (Accepted by Nature Physics). I was one of the key analyst for this analysis, together with a student and a research assistant from my group we developed the main two improvements in this analysis with respect to the previous R_K measurement. We have improved the analysis of the control mode $B^+ \to \psi(2S)(\to \ell^+\ell^-)K^+$, which demonstrates the robustness of the efficiency calculation at LHCb and gave strong confidence in the measurement. We improved the treatment of partially reconstructed background and modeled it using data, which allowed to keep the systematics at sub-percent level. In addition, we had a key role on designing the analysis strategy.

- R. Aaij, **N. Serra** *et al.*, [LHCb coll.], *"Determination of* f_s/f_d *for 7 TeV pp collisions and a measurement of the branching fraction of the decay* $B_d \to D^-K^+$*"*, Phys. Rev. Lett. 107 (2011) 211801. This paper was the first published measurement of f_s/f_d at LHC and the first PRL publication of LHCb. This analysis is based on a method that I proposed. I was the main analyst and contact author for this analysis, I led all parts of the analysis supervising the Ph.D. student who did most of the work.

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Measurement of the fragmentation fraction ratio* f_s/f_d *and its dependence on B meson kinematics"*, JHEP 04 (2013) 001. This papers measures the dependence of f_s/f_d on the kinematics, which was fundamental to extrapolate f_s/f_d to ATLAS and CMS without assumptions. I came up with the proposal of measuring this quantity as a function of the kinematic and I had a central role in the analysis strategy and I was involved in all parts of the analysis.

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Angular analysis of the* $B^0 \to K^{*0}\mu^+\mu^-$ *decay using* $3fb^{-1}$ *of integrated luminosity"*, JHEP 02 (2016) 104. This paper confirms the anomaly in the $B^0 \to K^*\mu^+\mu^-$ angular distributions. I was one of the three contact authors. I had a key role in the general analysis strategy, I studied the acceptance and worked on the extraction of the observables. In particular, I used the method of moments for extracting the value of angular observables.

- R. Aaij, **N. Serra** et al, [LHCb coll.], *Differential branching fraction and angular analysis of the decay* $B^0 \to K^{*0}\mu^+\mu^-$, JHEP 08 (2013) 131. This $B^0 \to K^*\mu^+\mu^-$ analysis is based on 1fb^{-1} LHCb data, here we developed several methods that became standard in LHCb and are used by many analyses. We measured several angular observables, including for the first time $A_T^{(2)}$, sensitive to Right-handed currents. This was also the first analysis to measure the zero-crossing point of the forward-backward asymmetry (A_{FB}), that was considered a key observable at the time. I had a key role in this analysis being involved in all parts, and I was one of the two contact authors. In particular, I developed the method to measure the zero-crossing point, worked on acceptance and data/mc corrections, on the measurement of the branching ratio and contributed to the angular fit.

- R. Aaij, **N. Serra** et al, [LHCb coll.], *"Search for long-lived scalar particles in* $B^+ \to \chi(\to \ell^+\ell^-)K^+$ *decays"*, Phys.Rev.D 95 (2017) 7, 071101. Best limits for dark scalars set using LHCb data. I led the analysis and supervised the Ph.D. student who did the measurement.

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Search for the lepton flavour violating decay $\tau^- \to \mu^-\mu^+\mu^-$"*, JHEP 02 (2015) 121. Best limit of $\tau \to 3\mu$ at LHC, competitive with B-factories. I have supervised the Ph.D. student who was the driving force for this measurement.

- R. Aaij, **N. Serra** et al, [LHCb], *"Differential branching fraction and angular analysis of the decay $B^0 \to K^*\mu^+\mu^-$"*, Phys. Rev. Lett. 108 (2012) 181806 This was the first analysis of the decay $B^0 \to K^*\mu^+\mu^-$ performed at LHCb performed with 0.37fb^{-1}. We measured the angular observables F_L and A_{FB} and the differential branching fraction. I was one of the main analysts, contributing to various parts of the analysis among which acceptance correction and control channel.

- R. Aaij, **N. Serra** *et al.* [LHCb coll.], *"Differential branching fraction and angular moments analysis of the decay $B^0 \to K^+\pi^-\mu^+\mu^-$ in the $K^*_{0,2}(1430)^0$ region"*, JHEP 12 (**2016**), 065. Angular analysis that measures branching ratios and 40 angular moments of S-, P- and D-wave in the region of $K\pi$ mass above the K^* resonance. This is the first attempt to understand this region. Thanks to this result we could accurately model partially reconstructed background in R_K. The ongoing measurement of $R_{K\pi}$ is also based on results from this analysis.

- R. Aaij, **N. Serra** *et al.* [LHCb coll.], *"Search for Lepton-Flavor Violating Decays $B^+ \to K^+\mu^\pm e^\mp$"* Phys. Rev. Lett. 123 (**2019**) no.24, 241802. World's best limit for the search of Lepton Flavour Violating decay $B^+ \to K^+\mu^\pm e^\mp$. I supervised one of the Ph.D. involved in this measurement, who was visiting student at the University of Zurich.

- C. Ahdida, **N. Serra** *et al.*, [SHiP], *"Sensitivity of the SHiP experiment to dark photons decaying to a pair of charged particles"*, Eur. Phys. J.C 81 (2021) 5, 451. This paper estimates the sensitivity to Dark Photons of the SHiP experiment. I have played a key role in all SHiP sensitivities and background studies. I had calculated the significance with a fast simulation I had developed for the original proposal. I have closely interacted with the groups who studied Dark Photon sensitivity with the full simulation. This paper demonstrates that SHiP can improve current limits by a few orders of magnitude.

- C. Ahdida, **N. Serra** *et al.*, [SHiP], *"Sensitivity of the SHiP experiment to light dark matter"*, JHEP 04 (2021) 199. I have supervised the Ph.D. students who worked on the Light Dark Matter sensitivity. This paper demonstrates that SHiP is competitive with current experiments searching for Light Dark Matter directly in the sub-GeV region. This work was the basis for sensitivity and optimization studies at SND@LHC.

- C. Ahdida, **N. Serra** *et al.*, [SHiP], *"Sensitivity of the SHiP experiment to Heavy Neutral Leptons"*, JHEP 04 (2019) 077. This paper calculates the SHiP sensitivity to Heavy Neutral Leptons. I had a strong impact in all background and sensitivity studies in SHiP. I have calculated the sensitivity with a fast simulation I had developed and closely interact with the groups that worked on the sensitivity with the full simulation. This paper demonstrated that SHiP can improve current limits on Heavy Neutral Leptons by more than two orders of magnitude.

Short author papers

- G. Isidori, D. Lancierini, P. Owen and **N. Serra**, *"On the significance of new physics in $b \to s\ell^+\ell^-$ decays"*, Phys.Lett.B 822 (2021) 136644, This paper considers the problem of the *Look-elesewhere Effect* in $b \to s\ell\ell$ decays for the first time, adopting an hyper-conservative theory approach. This is the most conservative rigorous method to combine the anomalies. e.g. more conservative than simply combining LFU measurements. This paper is considered a possible basis for a combination of $b \to s\ell\ell$ anomalies at LHCb.

- G. Isidori, D. Lancierini, A, Mathad, P. Owen, **N. Serra**, R. Silva Coutinho, *"A general effective field theory description of $b \to s\ell^+\ell^-$ lepton universality ratios"*, arXiv:2110.09882. Here we first developed a general formula that allows to add to the global fit for Wilson coefficients test of LFU consisting of non-exclusive decays, such as R_{pK}, $R_{K\pi}$ and $R_{K\pi\pi}$. This strategy greatly improves the significance to New Physics. In addition, these observables have less specific background with respect to R_K and R_{K^*}. If LHCb makes a combination of $b \to s\ell\ell$ anomalies by means of fitting Wilson coefficients this is the only way to include the measured observable R_{pK} and other ongoing non-exclusive LFU measurements.

- W. Bonivento, **N. Serra** et al, *"Proposal to Search for Heavy Neutral Leptons at the SPS"*, CERN-SPSC-2013-024. First proposal of the SHiP experiment at the SPS. I have done the entire fast-simulation of the experiment and calculated the sensitivity. I also gave a key contribution to the design and optimization of the experiment.

- A. Blondel, E. Graverini, **N. Serra** and M. Shaposhnikov, *"Search for Heavy Right Handed Neutrinos at the FCC-ee"*, Nucl.Part.Phys.Proc. 273-275 (2016) 1883-1890. First study on sterile neutrinos at FCC-ee. Proposed of using two displaced jets and a lepton to search for Heavy Neutral Leptons. Presented for the first time at ICHEP 2014.

- R. Fleischer, **N. Serra**, N. Tuning, *"New Strategy for B_s Branching Ratio Measurements and the Search for New Physics in $B_s^0 \to mu^+mu^-$"*. Phys. Rev. D82 034038 2010. This paper proposed one of the two methods used to measure the ratio of fragmentation fractions f_s/f_d. This quantity is fundamental to measure the branching ratio fo the decay $B_s \to \mu^+\mu^-$ at LHC.

- C. Cornella, G. Isidori, M. König, S. Liechti, P. Owen and **N. Serra**, *"Hunting for $B^+ \to K^+\tau^+\tau^-$ imprints on the $B^+ \to K^+\mu^+\mu^-$ dimuon spectrum"*, Eur.Phys.J.C 80 (2020) 12, 1095. Proposal for a new strategy to search for enhanced $b \to s\tau\tau$ transitions using its virtual contribution in the dimuon spectrum of the decay $B^+ \to K^+\mu^+\mu^-$. Measuring this contribution could relate quantitatively the semileptonic and rare decays anomalies. We demonstrated that this method significantly improves on direct measurements of $B^+ \to K^+\tau\tau$ and it will be a golden method at the LHCb upgrades.

- R. Fleischer, **N. Serra**, N. Tuning, *"Tests of Factorization and SU(3) Relations in B Decays into Heavy-Light Final States"*, Phys. Rev. D83 014017 2011. This paper studies breaking of QCD factorization and SU(3) symmetry relation in $B \to Dh$ decays, comparing them with semileptonic decays. We also suggest another implementation of the method for determining f_s/f_d with hadronic decays.

- A. Mauri, **N. Serra** and R. Silva Coutinho, *"Towards establishing lepton flavor universality violation in $B \to K^*\ell^+\ell^-$ decays"*, Phys. Rev. D 99 (2019) 1, 013007. Here we proposed a new strategy for measuring theory parameters (Wilson coefficients) in $B^0 \to K^*\ell\ell$ decays. The strategy of sharing some of the theory parameters allows to measure LFU of Wilson coefficients directly on data, opening the possibility to do an amplitude analysis with early data in LHCb. For instance this strategy uses simultaneously LFU ratios of branching ratios and angular observables, giving a strong handle against background for the electron channel. This allows to significantly improve the knowledge of R_{K^*}. An analysis based on this method is ongoing in LHCb.

- F. U. Bernlochner, M. Chrzaszcz, L. A. Dal, B. Farmer, P. Jackson, A. Kvellestad, F. Mahmoudi, A. Putze, C. Rogan, P. Scott, **N. Serra**, C. Weniger, M. White [GAMBIT Flavour Workgroup], *"FlavBit: A GAMBIT module for computing flavour observables and likelihoods"* Eur. Phys. J. C 77 (**2017**) no.11, 786. FlavBit is the part of GAMBIT package that takes into account flavour observables. It can also be used as a standalone software. I had a key role in the development of this software and contributed to the general strategy of the development of GAMBIT.

- C. Betancourt, A. Korzenev, P. Mermod and **N. Serra**, *"A prototype for the SHiP timing detector"*, Nucl. Instrum. Meth. A 979. This paper describes a large scale prototype of the SHiP timing detector that I proposed at the time of the SHiP Technical Proposal. My group and I have developed this prototype in collaboration with the University of Geneva.

- M. Ferrillo, A. Mathad, P. Owen and **N. Serra**, *"Probing effects of new physics in $\Lambda_b^0 \to \Lambda_c^+\mu^-\bar{\nu}_\mu$ decays"* JHEP 12 (**2019**), 148. We present for the first time the six-fold differential decay density expression for $\Lambda_b \to \Lambda_c\mu\nu$, taking into account the polarization of Λ_b and a complete basis of New Physics operators. Motivated by the semileptonic flavour anomalies we studied the LHCb sensitivity. An LHCb analysis based on this method is at currently ongoing.

- **N. Serra**, R. Silva Coutinho and D. van Dyk, *"Measuring the breaking of lepton flavor universality in $B \to K^*\ell^+\ell^-$"* Phys. Rev. D 95 (**2017**) no.3, 035029. We proposed new observables for $B \to K^*\ell\ell$ decays which have negligibly small theory uncertainties in the Standard Model and any New Physics models.

- J. Eschle, A. Puig Navarro, R. Silva Coutinho and **N. Serra**, *"zfit: scalable pythonic fitting"* SoftwareX 11 (**2020**) 100508. This paper presents a fitting package for HEP based on the Google Deep Learning Package Tensorlflow. The zfit package is a powerful and versatile model fitting library and can work naturally and easily on CPU and GPUs. It has a signficant gain in performances compared to RooFit and the better scaling with the increasing data size. The zfit package is rapidly gaining popularity in the particle physics community. In addition, zfit is affiliated to the Scikit-HEP project and other independent hep-libraries that build on top of zfit, such as hepstats, are being developed.

- J. Matias and **N. Serra**, *"A new relation between the zero of AFB in $B^0 \to K^*\mu^+\mu^-$ and the anomaly in P_5'"*, Phys. Rev. D 90, 034002 (2014). We have proposed new model-independent relations between the observables in the decay $B^0 \to K^*\mu^+\mu^-$. This method allows to test internal consistency of the measurements.

- F. Beaujean, M. Chrzaszcz , **N. Serra**, D. van Dyk, *"Extracting Angular Observables without a Likelihood and Applications to Rare Decays"*, Phys. Rev. D 91, 114012 (2015). We have proposed a new method to measure angular observables in the $B^0 \to K^*\mu^+\mu^-$ decay using the so-called method of moments. This method was used in LHCb analyses for measuring observables in $B^0 \to K^*\mu^+\mu^-$ and $B^0 \to K\pi\mu^+\mu^-$ decays.

- C. Betancourt, I. Bezshyiko, R. Brundler, **N. Serra** and B. Storaci *"SiPM readout for the SHiP timing detector"*, JINST 12 (2017) 02, C02058. This paper describes the readout system of the SHiP timing detector which is based on Silicon Photomultiplier arrays. This study includes characterization of SiPMs from different manufacturers.

- J. García Pardinas, S. Meloni, L. Grillo, P. Owen, M. Calvi, and **N. Serra** *"RooHammerModel: interfacing the HAMMER software tool with the HistFactory package"*, arXiv:2007.12605. This note describes the development of RooHammerModel, an interface between this tool and the commonly-used data-fitting framework HistFactory. This software is used in LFU analysis of semitleptonic decays.

Other Selected Papers

- M. Anelli, **N. Serra** *et al.*, [SHiP], *"A facility to Search for Hidden Particles (SHiP) at the CERN SPS"*, CERN-SPSC-2015-016. This is the SHiP technical proposal. I was one of the main editors for this document. I have led all physics and performance studies. I have also proposed here the SHiP timing detector based on plastic scintillators readout by SiPM. This detector and many of these studies were fundamental for SND@LHC.

- B. Flemming, Ian Shipsey, **N. Serra** et al, *"The Basic Research Needs for High Energy Physics Detector RD Study Panels"*, DOE Report. The DOE invited a number of experts to write a document on priorities for future R&D in high-energy physics. I was one of the four panel members for the chapter *Exploring the Unknown* which largely focuses on flavour physics and hidden sector. I was one of the four editors of the *Exploring the Unknown* section and participated to the discussions with the other working groups to present a coherent document.

- R Arink, **N. Serra** et al, *"Performance of the LHCb Outer Tracker"*, JINST 9 (2014) 01, P01002. This paper measures performance of the LHCb Outer Tracker. I have contributed to the Outer Tracker commissioning, testing and simulation during my first postdoc at NIKHEF.

- P. Athron, C. Balazs, T. Bringmann, A. Buckley, M. Chrząszcz, J. Conrad, J. M. Cornell, L. A. Dal, H. Dickinson, J. Edsjö, B. Farmer, T. E. Gonzalo, P. Jackson, A. Krislock, A. Kvellestad, J. Lundberg, J. McKay, F. Mahmoudi, G. D. Martinez, A. Putze, A. Raklev, J. Ripken, C. Rogan, A. Saavedra, C. Savage, P. Scott, S-H Seo, **N. Serra**, C. Weniger, M. White, S. Wild, [GAMBIT], *"GAMBIT: The Global and Modular Beyond-the-Standard-Model Inference Tool"*, Eur.Phys.J.C 77 (2017) 11, 784. This paper presents the open-source global fitting package GAMBIT. I have contributed to the development of this software package, in particular I had a key role in the early phase of the development of GAMBIT for adding flavour physics to this software.

- P. Athron, C. Balazs, T. Bringmann, A. Buckley, M. Chrząszcz, J. Conrad, J. M. Cornell, L. A. Dal, J. Edsjö, B. Farmer, P. Jackson, A. Krislock, A. Kvellestad, F. Mahmoudi, G. D. Martinez, A. Putze, A.

Raklev, C. Rogan, A. Saavedra, C. Savage, P. Scott, **N. Serra**, C. Weniger, M. White [GAMBIT], *"A global fit of the MSSM with GAMBIT"* Eur. Phys. J. C 77 (**2017**) no.12, 879 . This is one of the flagship studies we had decided to do when developing GAMBIT. This paper studies of MSSM setting strong constraints.

- P. Athron, C. Balázs, T. Bringmann, A. Buckley, M. Chrząszcz, J. Conrad, J. M. Cornell, L. A. Dal, J. Edsjö, B. Farmer, P. Jackson, F. Kahlhoefer, A. Krislock, A. Kvellestad, J. McKay, F. Mahmoudi, G. D. Martinez, A. Putze, A. Raklev, C. Rogan, A. Saavedra, C. Savage, Pat Scott, **N. Serra**, C. Weniger, M White [GAMBIT], *"Status of the scalar singlet dark matter model"* Eur. Phys. J. C 77 (**2017**) no.8, 568. This is one of the flagship studies we had decided to do when developing GAMBIT. This paper studies scalar singlet dark matter setting strong constraints.

- P. Athron, C. Balazs, T. Bringmann, A. Buckley, M. Chrząszcz, J. Conrad, J. M. Cornell, L. A. Dal, J. Edsjö, B. Farmer, P. Jackson, A. Krislock, A. Kvellestad, F. Mahmoudi, G. D. Martinez, A. Putze, A. Raklev, C. Rogan, R. Ruiz de Austri, A. Saavedra, C. Savage, P. Scott, **N. Serra**, C. Weniger, M. White [GAMBIT], *"Global fits of GUT-scale SUSY models with GAMBIT"* Eur. Phys. J. C 77 (**2017**) no.12, 824. This is one of the flagship studies we had decided to do when developing GAMBIT. This paper studies of GUT-scale SUSY models setting strong constraints.

- R. Keith Ellis, **N. Serra** et al., *"Physics Briefing Book : Input for the European Strategy for Particle Physics Update 2020"*, arXiv:1910.11775 . This document summarizes the discussions of the European Strategy for Particle Physics Upgrade 2019 in Granada. I contributed to discussions on flavour physics and hidden sector. I was the main editor for the section on Heavy Neutral Leptons.

- A. Cerri, **N. Serra** et al, *"Opportunities in Flavour Physics at the HL-LHC and HE-LHC"*, CERN Yellow Rep.Monogr. 7 (2019) 867-1158. Discussion on Flavour prospects at high-luminosity LHC. My group an I have contributed to the section on the flavour anomalies, both the semileptonic and rare decays.

- R Aaij, **N. Serra** et al, [LHCb coll.], *"Physics case for an LHCb Upgrade II - Opportunities in flavour physics, and beyond, in the HL-LHC era"*, LHCB-PUB-2018-009. Discussion on Flavour prospects for LHCb Upgrade II. My group an I have contributed to the section on the flavour anomalies, both he semileptonic and rare decays.

- C. Ahdida, **N. Serra** *et al.* [SHiP], *"Fast simulation of muons produced at the SHiP experiment using Generative Adversarial Networks"*, JINST 14 (**2019**), P11028. The SHiP experiment uses a high-intensity proton beam to search for feebly-interacting long-living particles. One of the problem is the background from secondary muons. Simulating enough statistics for this background is unfeasible. We have develped a simulation which can be tuned with real data using Generative Adversarial Network. I had the original idea and gave key contribution in designing the network. I closely collaborated with the group of the University of Bristol that implemented the network.

- C. Ahdida, **N. Serra** *et al.* [SHiP], *"Measurement of the muon flux from 400 GeV/c protons interacting in a thick molybdenum/tungsten target"* Eur. Phys. J. C *80* (**2020**) no.3, 284. Measurement of the muon flux with a replica of the SHiP target. This data are fundamental for tuning the SHiP simulation. My group has contributed to the data taking and corresponding analysis.

- C. Ahdida, **N. Serra** *et al.*, [SND@LHC], *"SND@LHC"*, CERN-LHCC-2020-002. My group and I have given a crucial contribution to the optimization of the detector and the evaluation of the sensitivity. We have also designed the upstream veto and the muon system which is based on the SHiP timing detector. The experiment has been approved by the relevant CERN scientific committee and will start data taking next year.

- C. Ahdida, **N. Serra** *et al.*, [SHiP], *"The experimental facility for the Search for Hidden Particles at the CERN SPS"*, JINST 14 (2019) 03, P03025. This paper describes the SHiP experimental facility, so-called Beam Dump Facility (BDF). I have given contributions to the design of the facility with physics studies.

- A. Akmete, **N. Serra** *et al.*, [SHiP], *"The active muon shield in the SHiP experiment"*, JINST 12 (2017) 05, P05011. The optimization of the muon shield is one of the most important tools to reject Standard Model background. I have contributed to the supervision of the Ph.D. students who worked on this topics.

- D. van Eijk, **N. Serra** et al., *"Radiation hardness of the LHCb Outer Tracker"*, Nucl.Instrum.Meth.A 685 (2012) 62-69. It was observed in the laboratory that the LHCb Outer Tracker (OT) suffers from radiation damage when irradiating OT models with mild sources. Extrapolations to calculate the ageing in the LHC beam were not considered reliable. I have strongly contributed to the method to monitor the radiation damage in special runs, without the need to access the detector. I implemented the first version of the software and I have co-supervised the student who have further implemented this method starting from my software.

- K. Arndt, **N. Serra** et al, [Mu3e collaboration], *"Technical design of the phase I Mu3e experiment"*, Nucl. Instrum. Meth. A 1014 (2021) 165679. My group has contributed to the SciFi detector of the Mu3e experiment.

- S. B. Jones, T. S. Nonnenmacher, E. Atkin, G. J. Barker, A. Basharina-Freshville, C. Betancourt, S. B. Boyd, D. Brailsford, Z. Chen-Wishart, L. Cremonesi, A. Deisting, A. Dias, P. Dunne, J. Haigh, P. Hamacher-Baumann, A. Kaboth, A. Korzenev, W. Ma, P. Mermod, M. Mironova, J. Monroe, R. Nichol, J. Nowak, W. Parker, H. Ritchie-Yates, S. Roth, R. Saakyan, **N. Serra**, Y. Shitov, J. Steinmann, A. Tarrant, M. A. Uchida, S. Valder, A. V. Waldron, M. Ward and M. O. Wascko, *"Off-Axis Characterisation of the CERN T10 Beam for low Momentum Proton Measurements with a High Pressure Gas Time Projection Chamber"* Instruments 4 (**2020**) no.3, 21. My group contributed to the Upstream Time of Flight Detector for which the prototype of the SHiP timing detector was used.

Selected Oral Presentations

In the following the list list of the main oral presentations in the last 10 years is reported. Talks given by group members or internal LHCb/SHiP talks are not listed.

- *Flavour anomalies at LHCb: a tale of beauty hadrons and broken universality, University of Bern, Bern Physics Colloquium (6th Oct 2021), Switzerland*

- *Prospects Search for HNLs with SHiP, MATHUSLA, FASER, and CODEX-b* , Workshop on Feebly-Interacting Particles, 31 Aug - 4 Sept 2020

- *Soft introduction to Artificial Neural Networks: Are Machines gonna conquer the world?* , National University of Science and Technology, Moscow, 30 June 2020

- *Estimate of SHiP sensitivities and backgrounds*, The CERN Beam Dump Facility and the Proposed SHiP Experiment: Physics Case and Opportunities for German Groups, 26 Mar 2020

- *Flavour Anomalies: status and prospects*, Physics of fundamental Symmetries and Interactions - PSI2019, Paul Scherrer Institut (PSI), Zurich, 20-25 October 2019

- *Flavour Anomalies: status and prospects*, 'Third Workshop on Heavy Quark Physics' - Islamabad - September 24-26, 2019

- *Highlights from the LHCb Experiment*, Nineteenth Lomonosov Conference on Elementary Particle Physics, Moscow, Russia, 22 - 28 Aug 2019

- *Prospects for the search of Heavy Neutral Leptons*, Open symposium - Update of the European Strategy for Particle Physics, 12-17 May 2019, Granada, Spain

- *Flavour Anomalies: status and prospects*, Phenomenology 2019 Symposium, University of Pittsburgh, 6-8 May 2019

- *The SHiP Experiment at CERN*, Centre for Cosmology, Particle Physics and Phenomenology, UCLouvain, Belgium, 30 April 2019

- *The SHiP Experiment*, XXIV Cracow EPIPHANY Conference in Heavy Flavour Physics, Cracow, 9th-12th January 2018

- *Status of SHiP*, Contribution to the SHiP Open Colloquium , CERN, (November 2017), Switzerland

- *Flavour anomalies and the quest for New Physics*, Physics Colloquium, National University of Science and Technology, Moscow, (9th October 2017), Russia
- *Future Intensity frontier (SHiP)*, Neutrinos at the High Energy Frontier, Amherst Center for Fundamental Interactions, Amherst (USA), 18th-20th July 2017
- *Flavour anomalies and the quest for New Physics*, Physics Colloquium, ETH Zurich, (31st May 2017), Switzerland
- *The SHiP Experiment at CERN*, Contribution to the CERN/EPFL Korean Theory Institute Meeting, CERN, (February 2017), Switzerland
- *Flavour Anomalies: Status and prospects for the Run2 of LHCb*, Zurich Phenomenology Workshop, ETH/University of Zurich, 9th-11th January 2017
- *Searching for Sterile Neutrinos and other Hidden Particles*, Particle Physics Seminar, Universitá di Milano, Milano (28th November 2016), Italy
- *Indirect BSM Searches*, Lecture at the PSI Summer School, Lyceum Alpinum, Zuoz (August 2016), Switzerland
- *Angular Analysis of rare decays*, Particle Physics Seminar, University of Dortmund, (27th June 2016), Germany
- *Flavour anomalies in b-hadron decays*, Particle Physics Seminar, Universitá la Sapienza, Rome (23 May 2016), Italy
- *Searching for New Particles at high and low energies*, Physics Colloquium, Universidad de Santiago de Compostela (USC), Spain (February 2016)
- *Angular analysis of the decay* $B^0 \to K^* \mu^+ \mu^-$ *at LHCb*, Particle Physics Seminar, Universitat de Barcelona, Barcelona, Spain (April 2015)
- *The decay* $B^0 \to K^* \mu^+ \mu^-$ *and other related anomalies: New Physics or conspiratorial effects*, Particle Physics Seminar, University of Milano Bicocca, Italy (June 2015)
- *SHiP: An experiment to search for Hidden Particles*, Particle Physics Seminar, DESY Colloquium, DESY, Germany (February 2015)
- SHiP Search for Hidden Particles, PSI Colloquium, Paul Scherrer Institut (PSI), Switzerland (December 2014)
- Sterile GeV neutrinos: Direct searches, Phys 2014, Queen Mary University, London, 15th-17th December 2014
- Searches for sterile neutrinos below the electroweak scale, GDR Neutrino 2014, Marseille France, 26th-27th November 2014
- Sensitivity to Sterile neutrinos at FCC-ee, 8th Physics Workshop of FCC-ee, Paris France, 27th-29th October 2014
- SHiP: Searching for hidden particles, Xth Rencontres Du Vietnam Flavour Physics, Quy Nhon, Vietnam, 27th July - 2nd Aug 2014
- Studies of electroweak penguin transitions of $b \to s\mu^+\mu^-$, European Physics Society (EPS) 2013, Stokolm, Sweden, 18th-24th July 2013
- LHCb status report, LHCC (LHC Experiments Committee) open session, CERN Switzerland (Dec 2012)
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