

## Asst. Prof. VAEL HAJAHMAD

### Personal Information

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### International Researcher IDs

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### Education Information

Doctorate, Rheinisch-Westfaelische Technische Hochschule Aachen, III. Physikalisches Institut B, Physics / High Energy Physics, Germany 2008 - 2013

Postgraduate, Halep Üniversitesi, Faculty Of Sciences/ Department Of Physics, Physics / Radiation Physics, Syria 2003 - 2004

Undergraduate, Halep Üniversitesi, Faculty Of Sciences/ Department Of Mathematics & Physics, Mathematics & Physics, Syria 1999 - 2003

### Foreign Languages

English, C1 Advanced

German, C1 Advanced

Turkish, B2 Upper Intermediate

Arabic, C1 Advanced

### Dissertations

Doctorate, Search for Top Quark Pair Resonances with the CMS Detector at the LHC, Rheinisch-Westfaelische Technische Hochschule Aachen, Faculty Of Mathematics, Informatics And Natural Sciences, Physics / High Energy & Particle Physics, 2013

Postgraduate, Thickness Measurements of Thin Foils using Alpha Particles, Halep Üniversitesi, Faculty Of Sciences, Physics / Nuclear Physics, 2004

### Research Areas

Physics, Nuclear physics, Experimental Methods of Particle and Nuclear Physics, Basic Particles and Areas, General Theory of Particles and Fields, Properties of special particles, Special reactions and phenomenology, Special theories and interaction models, particle systematics, Natural Sciences

## Academic Titles / Tasks

Assistant Professor, Erzincan Binali Yildirim University, Fen-Edebiyat Fakültesi, Fizik Bölümü, 2014 - Continues  
Assistant Professor, Erzincan Binali Yildirim University, Fen-Edebiyat Fakültesi, Fizik Bölümü, 2014 - 2018

## Courses

Thermodynamic and Statistic Physics, Undergraduate, 2019 - 2020  
Quantum Physics II, Undergraduate, 2019 - 2020  
Elementary Particle Physics, Undergraduate, 2019 - 2020  
COMPUTER APPLICATIONS, Undergraduate, 2017 - 2018  
Advanced Academic English, Postgraduate, 2017 - 2018  
USE OF BASIC INFORMATION TECHNOLOGIES, Undergraduate, 2017 - 2018  
Data Analysis and Programming (C++, Matlab, Mathematica), Postgraduate, 2017 - 2018  
Basics of Computer II, Undergraduate, 2017 - 2018

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **New Structures in the Formula Presented Mass Spectrum in Proton-Proton Collisions at Formula Presented**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., et al.  
Physical Review Letters, vol.132, no.11, 2024 (SCI-Expanded)
- II. **Muon identification using multivariate techniques in the CMS experiment in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., et al.  
Journal of Instrumentation, vol.19, no.2, 2024 (SCI-Expanded)
- III. **Two-particle Bose-Einstein correlations and their Lévy parameters in PbPb collisions at Formula Presented TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review C, vol.109, no.2, 2024 (SCI-Expanded)
- IV. **Search for Inelastic Dark Matter in Events with Two Displaced Muons and Missing Transverse Momentum in Proton-Proton Collisions at  $\sqrt{s}=13$  TeV**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., et al.  
Physical Review Letters, vol.132, no.4, 2024 (SCI-Expanded)
- V. **Evidence for the Higgs boson decay to a Z boson and a photon at the LHC**  
Aad G., Abbott B., Abeling K., Abicht N., Abidi S., Aboulhorma A., Abramowicz H., Abreu H., Abulaiti Y., Acharya B., et al.  
Physical Review Letters, vol.132, no.2, 2024 (SCI-Expanded)
- VI. **Measurement of the production cross section for a W boson in association with a charm quark in proton-proton collisions at  $\sqrt{s}=13$ TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle A. E. D., Hussain P., Jeitler M., et al.  
European Physical Journal C, vol.84, no.1, 2024 (SCI-Expanded)
- VII. **Luminosity determination using Z boson production at the CMS experiment**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle

A. E. D., Hussain P., et al.

European Physical Journal C, vol.84, no.1, 2024 (SCI-Expanded)

- VIII. **Measurement of the  $\tau$  lepton polarization in Z boson decays in proton-proton collisions at (Formula presented.)**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., et al.  
Journal of High Energy Physics, vol.2024, no.1, 2024 (SCI-Expanded)
- IX. **A search for decays of the Higgs boson to invisible particles in events with a top-antitop quark pair or a vector boson in proton-proton collisions at  $\sqrt{s}=13\text{TeV}$**   
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
European Physical Journal C, vol.83, no.10, 2023 (SCI-Expanded)
- X. **Measurement of the top quark mass using a profile likelihood approach with the lepton + jets final states in proton-proton collisions at  $\sqrt{s}=13\text{TeV}$**   
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Hussain P., Jeitler M., et al.  
European Physical Journal C, vol.83, no.10, 2023 (SCI-Expanded)
- XI. **Search for the lepton-flavor violating decay of the Higgs boson and additional Higgs bosons in the Formula Presented final state in proton-proton collisions at Formula Presented**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., et al.  
Physical Review D, vol.108, no.7, 2023 (SCI-Expanded)
- XII. **Measurement of the Dependence of the Hadron Production Fraction Ratios  $f_s/f_u$  and  $f_d/f_u$  on B Meson Kinematic Variables in Proton-Proton Collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.12, 2023 (SCI-Expanded)
- XIII. **Search for Exotic Higgs Boson Decays Formula Presented with Events Containing Two Merged Diphotons in Proton-Proton Collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.10, 2023 (SCI-Expanded)
- XIV. **Reconstruction of decays to merged photons using end-to-end deep learning with domain continuation in the CMS detector**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
Physical Review D, vol.108, no.5, 2023 (SCI-Expanded)
- XV. **Search for a vector-like quark  $T' \rightarrow tH$  via the diphoton decay mode of the Higgs boson in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Journal of High Energy Physics, vol.2023, no.9, 2023 (SCI-Expanded)
- XVI. **A search for new physics in central exclusive production using the missing mass technique with the CMS detector and the CMS-TOTEM precision proton spectrometer**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle A. E. D., Hussain P., Jeitler M., et al.  
European Physical Journal C, vol.83, no.9, 2023 (SCI-Expanded)
- XVII. **Observation of Same-Sign WW Production from Double Parton Scattering in Proton-Proton Collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.

- Physical Review Letters, vol.131, no.9, 2023 (SCI-Expanded)
- XVIII. **Measurement of differential cross sections for the production of a Z boson in association with jets in proton-proton collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
Physical Review D, vol.108, no.5, 2023 (SCI-Expanded)
- XIX. **Observation of the Rare Decay of the  $\eta$  Meson to Four Muons**  
Hayrapetyan A., Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., et al.  
Physical Review Letters, vol.131, no.9, 2023 (SCI-Expanded)
- XX. **Search for Higgs Boson Decay to a Charm Quark-Antiquark Pair in Proton-Proton Collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.6, 2023 (SCI-Expanded)
- XXI. **Azimuthal Correlations within Exclusive Dijets with Large Momentum Transfer in Photon-Lead Collisions**  
Tumasyan A., Adam W., Bergauer T., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., Krammer N., Lechner L., Liko D., et al.  
Physical Review Letters, vol.131, no.5, 2023 (SCI-Expanded)
- XXII. **Measurements of jet multiplicity and jet transverse momentum in multijet events in proton-proton collisions at  $\sqrt{s}=13\text{TeV}$**   
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle A. E. D., Frühwirth R., Jeitler M., et al.  
European Physical Journal C, vol.83, no.8, 2023 (SCI-Expanded)
- XXIII. **Constraints on anomalous Higgs boson couplings to vector bosons and fermions from the production of Higgs bosons using the  $\tau\tau$  final state**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Physical Review D, vol.108, no.3, 2023 (SCI-Expanded)
- XXIV. **Azimuthal correlations in Z +jets events in proton-proton collisions at  $\sqrt{s}=13\text{TeV}$**   
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle A. E. D., Frühwirth R., Jeitler M., et al.  
European Physical Journal C, vol.83, no.8, 2023 (SCI-Expanded)
- XXV. **Search for new physics using effective field theory in 13 TeV pp collision events that contain a top quark pair and a boosted Z or Higgs boson**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review D, vol.108, no.3, 2023 (SCI-Expanded)
- XXVI. **Measurement of the electroweak production of Formula Presented in association with two jets in proton-proton collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review D, vol.108, no.3, 2023 (SCI-Expanded)
- XXVII. **Search for Nonresonant Pair Production of Highly Energetic Higgs Bosons Decaying to Bottom Quarks**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.4, 2023 (SCI-Expanded)
- XXVIII. **Search for Higgs Boson and Observation of Z Boson through Their Decay into a Charm Quark-Antiquark Pair in Boosted Topologies in Proton-Proton Collisions at Formula Presented**

- Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.4, 2023 (SCI-Expanded)
- XXIX. **Precision measurement of the Z boson invisible width in pp collisions at  $s=13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.842, 2023 (SCI-Expanded)
- XXX. **Search for nonresonant Higgs boson pair production in final state with two bottom quarks and two tau leptons in proton-proton collisions at  $s=13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Hussain P., Jeitler M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.842, 2023 (SCI-Expanded)
- XXXI. **Search for electroweak production of charginos and neutralinos at  $s=13$ TeV in final states containing hadronic decays of WW, WZ, or WH and missing transverse momentum**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.842, 2023 (SCI-Expanded)
- XXXII. **Measurement of the  $B_s \rightarrow \mu^+ \mu^-$  decay properties and search for the  $B^0 \rightarrow \mu^+ \mu^-$  decay in proton-proton collisions at  $s=13$ TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Hussain P., Jeitler M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.842, 2023 (SCI-Expanded)
- XXXIII. **Probing Heavy Majorana Neutrinos and the Weinberg Operator through Vector Boson Fusion Processes in Proton-Proton Collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Physical Review Letters, vol.131, no.1, 2023 (SCI-Expanded)
- XXXIV. **CMS pythia 8 colour reconnection tunes based on underlying-event data**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Valle A. E. D., Frühwirth R., Jeitler M., et al.  
European Physical Journal C, vol.83, no.7, 2023 (SCI-Expanded)
- XXXV. **Search for direct pair production of supersymmetric partners of  $\tau$  leptons in the final state with two hadronically decaying  $\tau$  leptons and missing transverse momentum in proton-proton collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Physical Review D, vol.108, no.1, 2023 (SCI-Expanded)
- XXXVI. **Search for narrow resonances in the Formula Presented-tagged dijet mass spectrum in proton-proton collisions at Formula Presented**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
Physical Review D, vol.108, no.1, 2023 (SCI-Expanded)
- XXXVII. **Search for CP violating top quark couplings in pp collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Bergauer T., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., Lechner L., Liko D., et al.  
Journal of High Energy Physics, vol.2023, no.7, 2023 (SCI-Expanded)
- XXXVIII. **Search for CP violation in  $t \bar{t} H$  and  $tH$  production in multilepton channels in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
Journal of High Energy Physics, vol.2023, no.7, 2023 (SCI-Expanded)

- XXXIX. **Measurement of the mass dependence of the transverse momentum of lepton pairs in Drell–Yan production in proton–proton collisions at  $\sqrt{s}=13\text{TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Valle A. E. D., Frühwirth R., Jeitler M., Krammer N., et al.  
 European Physical Journal C, vol.83, no.7, 2023 (SCI-Expanded)
- XL. **Observation of electroweak  $W+W-$  pair production in association with two jets in proton-proton collisions at  $s=13\text{TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
 Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.841, 2023 (SCI-Expanded)
- XLI. **Search for CP violation using (Formula presented.) events in the lepton+jets channel in pp collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
 Journal of High Energy Physics, vol.2023, no.6, 2023 (SCI-Expanded)
- XLII. **Search for long-lived particles decaying to a pair of muons in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
 Journal of High Energy Physics, vol.2023, no.5, 2023 (SCI-Expanded)
- XLIII. **Search for top squarks in the four-body decay mode with single lepton final states in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
 Journal of High Energy Physics, vol.2023, no.6, 2023 (SCI-Expanded)
- XLIV. **Search for nonresonant Higgs boson pair production in the four leptons plus twob jets final state in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Hussain P., Jeitler M., et al.  
 Journal of High Energy Physics, vol.2023, no.6, 2023 (SCI-Expanded)
- XLV. **Search for heavy resonances and quantum black holes in  $e\mu$ ,  $e\tau$ , and  $\mu\tau$  final states in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
 Journal of High Energy Physics, vol.2023, no.5, 2023 (SCI-Expanded)
- XLVI. **Observation of triple  $J/\psi$  meson production in proton-proton collisions**  
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
 Nature Physics, vol.19, no.3, pp.338-350, 2023 (SCI-Expanded)
- XLVII. **Measurement of the Higgs boson width and evidence of its off-shell contributions to ZZ production**  
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
 Nature Physics, vol.18, no.11, pp.1329-1334, 2022 (SCI-Expanded)
- XLVIII. **earch for a  $W'$  boson decaying to a vector-like quark and a top or bottom quark in the all-jets final state at  $\sqrt{s} = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
 Journal of High Energy Physics, vol.2022, no.9, 2022 (SCI-Expanded)
- XLIX. **Search for Higgs Boson Pair Production in the Four b Quark Final State in Proton-Proton Collisions at  $s = 13 \text{ TeV}$**   
 Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E.,

Frühwirth R., Jeitler M., et al.

Physical Review Letters, vol.129, no.8, 2022 (SCI-Expanded)

- L. **Measurement of the Drell-Yan forward-backward asymmetry at high dilepton masses in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Journal of High Energy Physics, vol.2022, no.8, 2022 (SCI-Expanded)
- LI. **Search for Resonances Decaying to Three W Bosons in Proton-Proton Collisions at  $s = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., Krammer N., et al.  
Physical Review Letters, vol.129, no.2, 2022 (SCI-Expanded)
- LII. **Probing Charm Quark Dynamics via Multiparticle Correlations in Pb-Pb Collisions at  $s_{NN} = 5.02$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., Krammer N., et al.  
Physical Review Letters, vol.129, no.2, 2022 (SCI-Expanded)
- LIII. **Search for long-lived heavy neutral leptons with displaced vertices in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Journal of High Energy Physics, vol.2022, no.7, 2022 (SCI-Expanded)
- LIV. **Search for resonances decaying to three W bosons in the hadronic final state in proton-proton collisions at  $s = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Del Valle A. E., Frühwirth R., Jeitler M., et al.  
Physical Review D, vol.106, no.1, 2022 (SCI-Expanded)
- LV. **Measurement of the inclusive and differential WZ production cross sections, polarization angles, and triple gauge couplings in pp collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
Journal of High Energy Physics, vol.2022, no.7, 2022 (SCI-Expanded)
- LVI. **Search for heavy resonances decaying to  $Z(\nu\nu^*)V(qq^*)$  in proton-proton collisions at  $s = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
Physical Review D, vol.106, no.1, 2022 (SCI-Expanded)
- LVII. **Search for new physics in the lepton plus missing transverse momentum final state in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
Journal of High Energy Physics, vol.2022, no.7, 2022 (SCI-Expanded)
- LVIII. **Identification of hadronic tau lepton decays using a deep neural network**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., Krammer N., et al.  
Journal of Instrumentation, vol.17, no.7, 2022 (SCI-Expanded)
- LIX. **Search for resonant production of strongly coupled dark matter in proton-proton collisions at 13 TeV**  
Tumasyan A., Adam W., Andrejkovic J., Bergauer T., Chatterjee S., Damanakis K., Dragicevic M., Escalante Del Valle A., Frühwirth R., Jeitler M., et al.  
Journal of High Energy Physics, vol.2022, no.6, 2022 (SCI-Expanded)
- LX. **Search for charged-lepton flavor violation in top quark production and decay in pp collisions at  $\sqrt{s} = 13$  TeV**  
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- LXII. **Search for higgsinos decaying to two Higgs bosons and missing transverse momentum in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
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- CXIV. **Search for long-lived particles decaying to jets with displaced vertices in proton-proton collisions at  $s = 13$  TeV**

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- CXX. **Search for top squarks in final states with two top quarks and several light-flavor jets in proton-proton collisions at  $s = 13$  TeV**

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- CLVII. **Measurements of production cross sections of WZ and same-sign WW boson pairs in association with two jets in proton-proton collisions at  $\sqrt{s}=13\text{TeV}$**   
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- CLXI. **Measurement of the  $Y(1S)$  pair production cross section and search for resonances decaying to  $Y(1S)\mu^{(+)}\mu^{(-)}$  in proton-proton collisions at root  $\sqrt{s}=13\text{ TeV}$**   
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- CLXII. **Measurement of CKM matrix elements in single top quark t-channel production in proton-proton collisions at root  $\sqrt{s}=13\text{ TeV}$**   
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- CLXIII. **Measurements of  $(t\bar{t})\text{over-bar}H$  Production and the CP Structure of the Yukawa Interaction between the Higgs Boson and Top Quark in the Diphoton Decay Channel**  
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- CLXVII. **Measurement of the associated production of a Z boson with charm or bottom quark jets in proton-proton collisions at root  $\sqrt{s}=13\text{ TeV}$**

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- CLXXIII. **Measurement of the cross section for  $t(\bar{t})$  production with additional jets and b jets in pp collisions at root  $s=13\text{TeV}$**   
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- CLXXIV. **Measurement of the cross section for electroweak production of a Z boson, a photon and two jets in proton-proton collisions at root  $s=13\text{TeV}$  and constraints on anomalous quartic couplings**  
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- CLXXV. **Search for dijet resonances using events with three jets in proton-proton collisions at root  $s=13\text{ TeV}$**   
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- CLXXVIII. **Determination of the strong coupling constant  $\alpha(S)(m(Z))$  from measurements of inclusive W-**

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**CLXXX. A measurement of the Higgs boson mass in the diphoton decay channel**

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**CLXXXI. Study of J/ψ meson production inside jets in pp collisions at s=8TeV**

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**CLXXXII. Calibration of the CMS hadron calorimeters using proton-proton collision data at root s=13 TeV**

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**CLXXXIII. Search for direct top squark pair production in events with one lepton, jets, and missing transverse momentum at 13 TeV with the CMS experiment**

Sirunyan A. M., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Brandstetter J., Dragicevic M., Eroe J., Del Valle A. E., Flechl M., et al.

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**CLXXXIV. Search for an excited lepton that decays via a contact interaction to a lepton and two jets in proton-proton collisions at root s=13 TeV**

Sirunyan A. M., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Brandstetter J., Dragicevic M., Eroe J., Del Valle A. E., Flechl M., et al.

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**CLXXXV. Measurement of the Jet Mass Distribution and Top Quark Mass in Hadronic Decays of Boosted Top Quarks in pp Collisions at root s=13 TeV**

Sirunyan A. M., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Brandstetter J., Dragicevic M., Eroe J., Del Valle A. E., Flechl M., et al.

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Sirunyan A., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Dragicevic M., Erö J., Escalante Del Valle A., Flechl M., Frühwirth R., et al.

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**CLXXXVII. Measurement of the  $tt^{\bar{b}}b^{\bar{b}}$  production cross section in the all-jet final state in pp collisions at s=13 TeV**

Sirunyan A., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Brandstetter J., Dragicevic M., Erö J., Escalante Del Valle A., Flechl M., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.803, 2020 (SCI-Expanded)

**:LXXXVIII. Study of excited  $\Lambda_b^0$  states decaying to  $\Lambda_b^0 \pi^+ \pi^-$  in proton-proton collisions at s=13TeV**

Sirunyan A., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Dragicevic M., Erö J., Escalante Del Valle A., Flechl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.803, 2020 (SCI-Expanded)

**CLXXXIX. Running of the top quark mass from proton-proton collisions at s=13TeV**

- Sirunyan A., Tumasyan A., Adam W., Ambrogi F., Bergauer T., Brandstetter J., Dragicevic M., Erö J., Escalante Del Valle A., Flechl M., et al.  
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- CXC. **Production of  $\Lambda_c +$  baryons in proton-proton and lead-lead collisions at  $\sqrt{s} = 5.02$  TeV**  
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- CXCI. **Constraints on the  $\chi(c1)$  versus  $\chi(c2)$  Polarizations in Proton-Proton Collisions at  $\sqrt{s} = 8$  TeV**  
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- CXCII. **Measurement of properties of  $B(s)(0)s \rightarrow \mu(+)\mu(-)$  decays and search for  $B-0 \rightarrow \mu(+)\mu(-)$  with the CMS experiment**  
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- CXCIII. **Search for heavy Higgs bosons decaying to a top quark pair in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
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- CXCIV. **Search for a Narrow Resonance Lighter than 200 GeV Decaying to a Pair of Muons in Proton-Proton Collisions at  $\sqrt{s} = 13$  TeV**  
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- CXCV. **Observation of the  $\Lambda_b 0 \rightarrow J/\psi \Lambda \phi$  decay in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
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- CXCIX. **A search for the standard model Higgs boson decaying to charm quarks**  
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- CC. **Search for lepton flavour violating decays of a neutral heavy Higgs boson to  $\mu\tau$  and  $e\tau$  in proton-proton collisions at  $\sqrt{s} = 13$  TeV**

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- CC1. **Search for a heavy pseudoscalar Higgs boson decaying into a 125 GeV Higgs boson and a Z boson in final states with two tau and two light leptons at  $\sqrt{s} = 13$  TeV**  
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- CCIV. **Search for supersymmetry in pp collisions at  $s = 13$  TeV with 137 fb<sup>-1</sup> in final states with a single lepton using the sum of masses of large-radius jets**  
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- CCV. **Combined search for supersymmetry with photons in proton-proton collisions at  $s = 13$  TeV**  
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- CCVI. **Search for production of four top quarks in final states with same-sign or multiple leptons in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
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- CCVII. **Measurement of the top quark pair production cross section in dilepton final states containing one  $\tau$  lepton in pp collisions at  $\sqrt{s} = 13$  TeV**  
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- CCXI. **Search for electroweak production of a vector-like T quark using fully hadronic final states**  
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- CCXII. **Evidence for WW production from double-parton interactions in proton–proton collisions at  $\sqrt{s}=13\text{TeV}$**   
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- CCXIV. **Search for a charged Higgs boson decaying into top and bottom quarks in events with electrons or muons in proton-proton collisions at  $\sqrt{s} = 13\text{ TeV}$**   
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- CCXXVII. **Search for dark photons in decays of Higgs bosons produced in association with Z bosons in proton-proton collisions at  $\sqrt{s} = 13 \text{ TeV}$**   
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- CCXLI. **Search for R -parity violating supersymmetry with displaced vertices in proton-proton collisions at  $s = 8$  TeV**  
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- CCXLII. **Observation of the decay  $B^+ \rightarrow \psi(2S)\phi(1020)K^+$  in pp collisions at  $s=8$ TeV**  
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- CCXLIV. **Measurement of the ZZ production cross section and  $Z \rightarrow \ell + \ell - \ell' + \ell' -$  branching fraction in pp collisions at  $s = 13$  TeV**  
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- CCXLV. **Studies of inclusive four-jet production with two b -tagged jets in proton-proton collisions at 7 TeV**  
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- CCXLVI. **Search for new physics in final states with two opposite-sign, same-flavor leptons, jets, and missing transverse momentum in pp collisions at  $\sqrt{s} = 13$  TeV**  
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- CCXLVII. **Measurement of the mass of the top quark in decays with a  $J/\psi$  meson in pp collisions at 8 TeV**  
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- CCXLVIII. **Search for dark matter in proton-proton collisions at 8 TeV with missing transverse momentum and vector boson tagged jets**  
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- CCLIII. **Measurement of the ratio  $B(Bs_0 \rightarrow J/\psi f_0(980))/B(Bs_0 \rightarrow J/\psi \phi(1020))$  in pp collisions at  $\sqrt{s} = 7$  TeV**

- Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
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- CCLIV. **Search for new phenomena in monophoton final states in proton-proton collisions at  $s=8$  TeV**  
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- CCLV. **Search for single production of scalar leptoquarks in proton-proton collisions at  $s = 8$  TeV**  
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- CCLVI. **Search for a massive resonance decaying into a higgs boson and a W or Z boson in hadronic final states in proton-proton collisions at (Formula presented) = 8 TeV**  
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- CCLVII. **Search for  $W' \rightarrow tb$  in proton-proton collisions at  $\sqrt{s} = 8$  TeV**  
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- CCLVIII. **Search for neutral MSSM Higgs bosons decaying to  $\mu+\mu^-$  in pp collisions at  $\sqrt{s}=7$  and 8 TeV**  
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- CCLIX. **A search for pair production of new light bosons decaying into muons**  
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- CCLX. **Search for resonant  $t t^{-}$  production in proton-proton collisions at  $s = 8$  TeV SEARCH for RESONANT  $t t^{-}$  PRODUCTION in ... V. KHACHATRYAN et al.**  
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- CCLXI. **Search for long-lived charged particles in proton-proton collisions at  $\sqrt{s} = 13$  TeV**  
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- CCLXII. **Production of leading charged particles and leading charged-particle jets at small transverse momenta in pp collisions at  $s = 8$  TeV**  
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- CCLXIII. **Search for diphoton resonances in the mass range from 150 to 850 GeV in pp collisions at  $s=8$ TeV**  
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- CCLXIV. **Study of W boson production in pPb collisions at  $\sqrt{s_{NN}}=5.02$  TeV**  
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- CCLXV. **Angular coefficients of Z bosons produced in pp collisions at  $s=8$  TeV and decaying to  $\mu+\mu^-$  as a function of transverse momentum and rapidity**  
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- CCLXVI. **Measurement of the differential cross section for top quark pair production in pp collisions at  $\sqrt{s}=8$  TeV**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
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- CCLXVII. **Search for supersymmetry with photons in pp collisions at  $s=8$  TeV**  
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- CCLXVIII. **Measurements of the  $\Upsilon(1S)$ ,  $\Upsilon(2S)$ , and  $\Upsilon(3S)$  differential cross sections in pp collisions at  $s=7$  TeV**  
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- CCLXIX. **Search for lepton-flavour-violating decays of the Higgs boson**  
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- CCLXX. **Search for resonant pair production of Higgs bosons decaying to two bottom quark-antiquark pairs in proton-proton collisions at 8 TeV**  
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- CCLXXI. **Measurement of the Z boson differential cross section in transverse momentum and rapidity in proton-proton collisions at 8 TeV**  
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- CCLXXII. **Measurements of the ZZ production cross sections in the  $2l2\nu$  channel in proton-proton collisions at  $\sqrt{s}=7$  and 8 TeV and combined constraints on triple gauge couplings**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
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- CCLXXIII. **Comparison of the  $Z/\gamma^* + \text{jets}$  to  $\gamma + \text{jets}$  cross sections in pp collisions at (Formula presented.) TeV**  
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The CMS collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Asilar E., Bergauer T., Brandstetter J., Brondolin E., Dragicevic M., et al.  
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- CCLXXV. **Evidence for transverse-momentum- and pseudorapidity-dependent event-plane fluctuations in PbPb and p Pb collisions**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Asilar E., Bergauer T., Brandstetter J., Dragicevic M., Erö J., Flechl M., et al.  
Physical Review C - Nuclear Physics, vol.92, no.3, 2015 (SCI-Expanded)
- CCLXXVI. **Search for a pseudoscalar boson decaying into a Z boson and the 125 GeV Higgs boson in  $\ell+\ell-bb^{-}$  final states**  
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- CCLXXVII. **Search for narrow high-mass resonances in proton-proton collisions at  $s=8$  TeV decaying to a Z and a Higgs boson**  
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- :CLXXVIII. **Search for neutral color-octet weak-triplet scalar particles in proton-proton collisions at  $\sqrt{s}=8$  TeV**  
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- CCLXXIX. **Performance of photon reconstruction and identification with the CMS detector in proton-proton collisions at  $s = 8$  TeV**  
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- CCLXXX. **Search for pair-produced resonances decaying to jet pairs in proton-proton collisions at  $s=8$  TeV**  
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- CCLXXXII. **Search for third-generation scalar leptoquarks in the  $t\bar{t}$  channel in proton-proton collisions at  $\sqrt{s}=8$  TeV**  
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- :CLXXXIII. **Constraints on the spin-parity and anomalous HVV couplings of the Higgs boson in proton collisions at 7 and 8 TeV**  
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- :CLXXXIV. **Measurement of diffractive dissociation cross sections in pp collisions at  $s = 7\text{ TeV}$**   
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- CCLXXXV. **Distributions of topological observables in inclusive three- and four-jet events in pp collisions at  $\sqrt{s} = 7\text{ TeV}$**   
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- :CLXXXVI. **Search for heavy Majorana neutrinos in  $\mu\pm\mu\pm + \text{jets}$  events in proton-proton collisions at  $s = 8\text{ TeV}$**   
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- CLXXXVII. **Measurement of the cross section ratio  $\sigma_{t\bar{t}b\bar{b}}/\sigma_{t\bar{t}j\bar{j}}$  in pp collisions at  $s = 8\text{ TeV}$**   
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- :LXXXVIII. **Search for quark contact interactions and extra spatial dimensions using dijet angular distributions in proton-proton collisions at  $s = 8\text{ TeV}$**   
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- CCXCI. **Constraints on parton distribution functions and extraction of the strong coupling constant from the inclusive jet cross section in pp collisions at  $\sqrt{s} = 7\text{ TeV}$**   
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- CCXCII. **Search for a standard model Higgs boson produced in association with a top-quark pair and decaying to bottom quarks using a matrix element method**  
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- CCXCIII. **Observation of the rare  $B^0 \rightarrow \mu^+\mu^-$  decay from the combined analysis of CMS and LHCb data**  
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- CCXCIV. **Searches for third-generation squark production in fully hadronic final states in proton-proton collisions at (Formula Presented.) TeV**

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- CCXCVI. **Performance of electron reconstruction and selection with the CMS detector in proton-proton collisions at  $\sqrt{s}=8\text{TeV}$**   
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- CCXCVII. **Study of final-state radiation in decays of Z bosons produced in pp collisions at 7 TeV**  
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- CCXCVIII. **Precise determination of the mass of the Higgs boson and tests of compatibility of its couplings with the standard model predictions using proton collisions at 7 and 8 TeV**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
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- CCXCIX. **Searches for supersymmetry using the MT2 variable in hadronic events produced in pp collisions at 8 TeV**  
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- CCC. **Search for physics beyond the standard model in final states with a lepton and missing transverse energy in proton-proton collisions at  $s=8\text{TeV}$**   
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- CCCI. **Searches for supersymmetry based on events with b jets and four W bosons in pp collisions at 8 TeV**  
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- CCCIII. **Measurement of  $J/\psi$  and  $\psi(2S)$  prompt double-differential cross sections in pp collisions at  $s=7\text{TeV}$**   
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- CCCV. **Search for dark matter, extra dimensions, and unparticles in monojet events in proton–proton collisions at  $\sqrt{s} = 8$  TeV**  
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- CCCVI. **Measurement of the inclusive 3-jet production differential cross section in proton–proton collisions at 7 TeV and determination of the strong coupling constant in the TeV range**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
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- CCCVII. **Nuclear effects on the transverse momentum spectra of charged particles in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV**  
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- CCCVIII. **Search for stealth supersymmetry in events with jets, either photons or leptons, and low missing transverse momentum in pp collisions at 8 TeV**  
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- CCCIX. **Measurements of differential and double-differential Drell–Yan cross sections in proton–proton collisions at  $\sqrt{s} = 8$  TeV**  
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- CCCX. **Search for decays of stopped long-lived particles produced in proton–proton collisions at  $\sqrt{s} = 8$ , TeV**  
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- CCCXI. **Measurement of the Z $\gamma$  production cross section in pp collisions at 8 TeV and search for anomalous triple gauge boson couplings**  
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- CCCXII. **Search for physics beyond the standard model in dilepton mass spectra in proton-proton collisions at  $\sqrt{s} = 8$  TeV**  
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- CCCXIII. **Search for physics beyond the standard model in events with two leptons, jets, and missing transverse momentum in pp collisions at  $\sqrt{s} = 8$  TeV**  
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- CCCXIV. **Search for supersymmetry using razor variables in events with b -tagged jets in pp collisions at  $s = 8$  TeV**  
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- CCCXV. **Search for long-lived particles that decay into final states containing two electrons or two muons in proton-proton collisions at  $s = 8\text{TeV}$**   
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- CCCXVI. **Search for resonances and quantum black holes using dijet mass spectra in proton-proton collisions at  $s = 8\text{TeV}$**   
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- CCCXVII. **Measurements of jet multiplicity and differential production cross sections of Z+jets events in proton-proton collisions at  $s = 7\text{TeV}$**   
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Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
Physical Review Letters, vol.114, no.10, 2015 (SCI-Expanded)
- CCCXIX. **Long-range two-particle correlations of strange hadrons with charged particles in pPb and PbPb collisions at LHC energies**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.742, pp.200-224, 2015 (SCI-Expanded)
- CCCXX. **Search for displaced supersymmetry in events with an electron and a muon with large impact parameters**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
Physical Review Letters, vol.114, no.6, 2015 (SCI-Expanded)
- CCCXXI. **Performance of the CMS missing transverse momentum reconstruction in pp data at  $\sqrt{s} = 8\text{TeV}$**   
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
Journal of Instrumentation, vol.10, no.2, 2015 (SCI-Expanded)
- CCCXXII. **Differential cross section measurements for the production of a W boson in association with jets in proton-proton collisions at  $s = 7\text{TeV}$**   
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.741, pp.12-37, 2015 (SCI-Expanded)
- CCCXXIII. **Study of vector boson scattering and search for new physics in events with two same-sign leptons and two jets**  
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., Ghete V., et al.  
Physical Review Letters, vol.114, no.5, 2015 (SCI-Expanded)
- CCCXXIV. **Search for long-lived neutral particles decaying to quark-antiquark pairs in proton-proton collisions at  $s = 8\text{TeV}$**   
Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.91, no.1, 2015 (SCI-Expanded)
- CCCXXV. **Measurement of the W boson helicity in events with a single reconstructed top quark in pp collisions**



at  $\sqrt{s} = 8 \text{ TeV}$

The CMS collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., et al.

Journal of High Energy Physics, vol.2015, no.1, 2015 (SCI-Expanded)

CCCXXVI. **Measurement of the  $pp \rightarrow ZZ$  production cross section and constraints on anomalous triple gauge couplings in four-lepton final states at  $s=8 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.740, pp.250-272, 2015 (SCI-Expanded)

CCCXXVII. **Search for new resonances decaying via  $WZ$  to leptons in proton-proton collisions at  $s=8 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.740, pp.83-104, 2015 (SCI-Expanded)

CCCXXVIII. **Measurement of the ratio of the production cross sections times branching fractions of  $B_{c\pm} \rightarrow J/\psi \pi^\pm$  and  $B^\pm \rightarrow J/\psi K^\pm$  and (Formula presented.) in  $pp$  collisions at (Formula presented.)  $\text{TeV}$**

The CMS collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

Journal of High Energy Physics, vol.2015, no.1, 2015 (SCI-Expanded)

CCCXXIX. **Search for disappearing tracks in proton-proton collisions at  $\text{TeV}$ .**

The CMS collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Friedl M., Frühwirth R., et al.

Journal of High Energy Physics, vol.2015, no.1, 2015 (SCI-Expanded)

CCCXXX. **Measurement of the production cross section ratio  $\sigma(\chi_{b2}(1P))/\sigma(\chi_{b1}(1P))$  in  $pp$  collisions at  $s=8 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.743, pp.383-402, 2015 (SCI-Expanded)

CCCXXXI. **Measurement of electroweak production of two jets in association with a  $Z$  boson in proton-proton collisions at  $\sqrt{s}=8 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

European Physical Journal C, vol.75, no.2, 2015 (SCI-Expanded)

CCCXXXII. **Study of  $Z$  production in  $PbPb$  and  $pp$  collisions at (Formula presented.)  $\text{TeV}$  in the dimuon and dielectron decay channels**

The CMS collaboration C., Chatrchyan S., Khachatryan V., Sirunyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

Journal of High Energy Physics, vol.2015, no.3, 2015 (SCI-Expanded)

CCCXXXIII. **Measurement of prompt  $\psi(2S)$  to  $J/\psi$  yield ratios in  $Pb-Pb$  and  $p-p$  collisions at  $\sqrt{s_{NN}}=2.76 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physical Review Letters, vol.113, no.26, 2014 (SCI-Expanded)

CCCXXXIV. **Searches for heavy Higgs bosons in two-Higgs-doublet models and for  $t \rightarrow ch$  decay using multilepton and diphoton final states in  $pp$  collisions at  $8 \text{ TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.11, 2014 (SCI-Expanded)

CCCXXXV. **Search for pair production of third-generation scalar leptoquarks and top squarks in proton-proton collisions at [Formula presented]  $\text{TeV}$**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.739, pp.229-249, 2014 (SCI-Expanded)

:CCXXXVI. **Measurement of the  $t\bar{t}$  production cross section in  $pp$  collisions at  $\sqrt{s}=8$  TeV in dilepton final states containing one  $\tau$  lepton**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.739, pp.23-43, 2014 (SCI-Expanded)

CCXXXVII. **Search for supersymmetry with razor variables in  $pp$  collisions at  $s = 7\text{TeV}$**

Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.11, 2014 (SCI-Expanded)

:CXXXVIII. **CMS Collaboration**

Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

Nuclear Physics A, vol.932, pp.595-620, 2014 (SCI-Expanded)

:CCXXXIX. **Searches for electroweak neutralino and chargino production in channels with Higgs, Z, and W bosons in  $pp$  collisions at 8 TeV**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.9, 2014 (SCI-Expanded)

CCCXL. **Measurement of differential cross sections for the production of a pair of isolated photons in  $pp$  collisions at  $s=7\text{TeV}$**

CMS Collaboration C., Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., et al.

European Physical Journal C, vol.74, no.11, pp.1-30, 2014 (SCI-Expanded)

CCCXLI. **Search for heavy neutrinos and W bosons with right-handed couplings in proton–proton collisions at (Formula presented.)**

CMS Collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

European Physical Journal C, vol.74, no.11, 2014 (SCI-Expanded)

CCCXLII. **CMS Collaboration**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

Nuclear Physics A, vol.931, pp.1241-1265, 2014 (SCI-Expanded)

CCCXLIII. **Observation of the diphoton decay of the Higgs boson and measurement of its properties**

Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.

European Physical Journal C, vol.74, no.10, pp.1-49, 2014 (SCI-Expanded)

CCCXLIV. **Measurement of pseudorapidity distributions of charged particles in proton–proton collisions at (Equation Present) TeV by the CMS and TOTEM experiments**

The CMS and TOTEM Collaborations C., Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., et al.

European Physical Journal C, vol.74, no.10, pp.1-26, 2014 (SCI-Expanded)

CCCXLV. **Measurement of the ratio of inclusive jet cross sections using the anti- $k_T$  algorithm with radius parameters  $R=0.5$  and  $0.7$  in  $pp$  collisions at  $s = 7\text{TeV}$**

Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.7, 2014 (SCI-Expanded)

- CCCXLVI. **Evidence of b -jet quenching in PbPb collisions at  $s_{NN} = 2.76\text{TeV}$**   
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review Letters, vol.113, no.13, 2014 (SCI-Expanded)
- CCCXLVII. **Search for top-squark pairs decaying into Higgs or Z bosons in pp collisions at  $\sqrt{s}=8\text{ TeV}$**   
 Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
 Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.736, pp.371-397, 2014 (SCI-Expanded)
- CCCXLVIII. **Constraints on the Higgs boson width from off-shell production and decay to Z-boson pairs**  
 Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
 Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.736, pp.64-85, 2014 (SCI-Expanded)
- CCCXLIX. **Measurement of the ratio  $B(t \rightarrow Wb)/B(t \rightarrow Wq)$  in pp collisions at  $s=8\text{ TeV}$**   
 Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
 Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.736, pp.33-57, 2014 (SCI-Expanded)
- CCCL. **Searches for electroweak production of charginos, neutralinos, and sleptons decaying to leptons and W, Z, and Higgs bosons in pp collisions at 8 TeV**  
 The CMS Collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 European Physical Journal C, vol.74, no.9, 2014 (SCI-Expanded)
- CCCLI. **Measurement of top quark-antiquark pair production in association with a W or Z boson in pp collisions at  $\sqrt{s} = 8\text{ TeV}$**   
 The CMS Collaboration C., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 European Physical Journal C, vol.74, no.9, 2014 (SCI-Expanded)
- CCCLII. **Search for  $WW\gamma$  and  $WZ\gamma$  production and constraints on anomalous quartic gauge couplings in pp collisions at  $s = 8\text{TeV}$**   
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.3, 2014 (SCI-Expanded)
- CCCLIII. **Search for anomalous production of events with three or more leptons in pp collisions at  $s = 8\text{TeV}$**   
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.3, 2014 (SCI-Expanded)
- CCCLIV. **Search for jet extinction in the inclusive jet-pT spectrum from proton-proton collisions at  $s=8\text{TeV}$**   
 Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
 Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.3, 2014 (SCI-Expanded)
- CCCLV. **Measurement of jet fragmentation in PbPb and pp collisions at  $s_{NN} = 2.76\text{ TeV}$**   
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review C - Nuclear Physics, vol.90, no.2, 2014 (SCI-Expanded)
- CCCLVI. **Measurement of the muon charge asymmetry in inclusive  $pp \rightarrow w+X$  production at  $s = 7\text{TeV}$  and an improved determination of light parton distribution functions**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.90, no.3, 2014 (SCI-Expanded)

- CCCLVII. **Measurement of jet multiplicity distributions in (Formula presented.) production in pp collisions at (Formula presented.)**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
European Physical Journal C, vol.74, no.8, pp.1-29, 2014 (SCI-Expanded)
- CCCLVIII. **Measurement of WZ and ZZ production in pp collisions at (Formula presented.) in final states with b-tagged jets**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
European Physical Journal C, vol.74, no.8, pp.1-22, 2014 (SCI-Expanded)
- CCCLIX. **Search for invisible decays of Higgs bosons in the vector boson fusion and associated ZH production modes**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
European Physical Journal C, vol.74, no.8, pp.1-35, 2014 (SCI-Expanded)
- CCCLX. **Measurement of the production cross section for a W boson and two b jets in pp collisions at  $\sqrt{s}=7$  TeV**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.735, pp.204-225, 2014 (SCI-Expanded)
- CCCLXI. **Studies of dijet transverse momentum balance and pseudorapidity distributions in pPb collisions at  $\sqrt{s_{NN}}= 5.02$  TeV**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
European Physical Journal C, vol.74, no.7, 2014 (SCI-Expanded)
- CCCLXII. **Observation of a peaking structure in the  $J/\psi\phi$  mass spectrum from  $B_{\pm}\rightarrow J/\psi\phi K_{\pm}$  decays**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, vol.734, pp.261-281, 2014 (SCI-Expanded)
- CCCLXIII. **Observation of the associated production of a single top quark -and a W boson in pp collisions at  $s=8$ TeV**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Physical Review Letters, vol.112, no.23, 2014 (SCI-Expanded)
- CCCLXIV. **Alignment of the CMS tracker with LHC and cosmic ray data**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Journal of Instrumentation, vol.9, no.6, 2014 (SCI-Expanded)
- CCCLXV. **Measurement of four-jet production in proton-proton collisions at  $s=7$ TeV**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.89, no.9, 2014 (SCI-Expanded)
- CCCLXVI. **Measurement of inclusive W and Z boson production cross sections in pp collisions at  $s=8$ TeV**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
Physical Review Letters, vol.112, no.19, 2014 (SCI-Expanded)
- CCCLXVII. **Measurement of the properties of a Higgs boson in the four-lepton final state**  
Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.

- Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.89, no.9, 2014 (SCI-Expanded)
- :CCLXVIII. **Measurement of the  $W\gamma$  and  $Z\gamma$  inclusive cross sections in pp collisions at  $s = 7$  TeV and limits on anomalous triple gauge boson couplings**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review D - Particles, Fields, Gravitation and Cosmology, vol.89, no.9, 2014 (SCI-Expanded)
- CCCLXIX. **Measurements of  $t\bar{t}$  spin correlations and top-quark polarization using dilepton final states in pp collisions at  $s = 7$  TeV**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Physical Review Letters, vol.112, no.18, 2014 (SCI-Expanded)
- CCCLXX. **Measurement of the t-channel single-top-quark production cross section and of the  $|V_{tb}|$  CKM matrix element in pp collisions at  $\sqrt{s} = 8$  TeV**  
 Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., Frühwirth R., et al.  
 Journal of High Energy Physics, vol.2014, no.6, 2014 (SCI-Expanded)
- CCCLXXI. **Study of the production of charged pions, kaons, and protons in pPb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 European Physical Journal C, vol.74, no.6, pp.1-27, 2014 (SCI-Expanded)
- CCCLXXII. **Search for new physics in the multijet and missing transverse momentum final state in proton-proton collisions at  $\sqrt{s} = 8$  TeV**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Bergauer T., Dragicevic M., Erö J., Fabjan C., Friedl M., et al.  
 Journal of High Energy Physics, vol.2014, no.6, 2014 (SCI-Expanded)
- :CCLXXIII. **Inclusive search for supersymmetry using razor variables in pp collisions at  $\sqrt{s} = 7$  TeV**  
 Chatrchyan S., Khachatryan V., Sirunyan A., Tumasyan A., Adam W., Aguilo E., Bergauer T., Dragicevic M., Erö J., Fabjan C., et al.  
 Physical Review Letters, vol.111, no.8, 2013 (SCI-Expanded)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Search for supersymmetry with a compressed mass spectrum in events involving soft leptons, jets and missing transverse momentum with an integrated luminosity of 20.1 pb<sup>1</sup> of  $\sqrt{s} = 8$  TeV ATLAS data**  
 Morvaj L.  
 2013 European Physical Society Conference on High Energy Physics, EPS-HEP 2013, Stockholm, Sweden, 18 - 24 July 2013

## Metrics

Publication: 374  
 Citation (WoS): 274  
 Citation (Scopus): 15147  
 H-Index (WoS): 5  
 H-Index (Scopus): 65

## Non Academic Experience

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