

# William E. Gabella — Curriculum Vitae

431 1/2 R St NW #2, Washington, DC 20001

☎ +1 (615) 856-3766 • ✉ bill.gabella@gmail.com • 🌐 gabella.github.io  
 📄 gabella • in bill-gabella

## Professional Experience

<b>Vanderbilt University</b>	<b>Nashville, TN, USA</b>
◦ Research Assistant Professor of Physics & Astronomy	2002–2024
◦ Chief Scientist Compton X-ray Source, FEL Center	2005–2008
◦ Associate Director for FEL Operations	1995–2005
◦ Research Associate	1993–2002
<b>University of California</b>	<b>Los Angeles, CA, USA</b>
◦ Research Associate Physics & Astronomy	1991–1993
<b>SLAC National Accelerator Laboratory</b>	<b>Menlo Park, CA, USA</b>
◦ Research Associate Accelerator Beam Physics	1991

## Education

<b>Colorado School of Mines</b>	<b>Golden, CO, USA</b>
<i>B. S. Engineering Physics</i>	1980–1984
<b>University of Colorado</b>	<b>Boulder, CO, USA</b>
<i>M. S., Ph. D. Physics</i>	1984–1991
<b>Advisors:</b> Prof. John Cary (CU), Dr. Ronald Ruth and Dr. Robert Warnock (SLAC), <b>Thesis Title:</b> <i>Numerical Solution of The Hamilton-Jacobi Equation in <math>2\frac{1}{2}</math> Degrees of Freedom</i>	
<b>University of California</b>	<b>Los Angeles, CA, USA</b>
<i>Postdoctoral Researcher, Accelerator Physics</i>	1991–1993
<b>Advisor:</b> Prof. David Cline	
<b>Vanderbilt University</b>	<b>Nashville, TN, USA</b>
<i>Postdoctoral Researcher, Free-electron Laser and Accelerator Physics</i>	1993–1995
<b>Advisors:</b> Prof. Charles Brau and Dr. Marcus Mendenhall	

## Select Publications

- Nicholas Spurlock, William E. Gabella *et al.*, *Fluorophore-quencher interactions effect on hybridization characteristics of complementary oligonucleotides.*, Anal. Meth. 18 (2024), <https://doi.org/10.1039/D4AY00083H>.
- The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott *et al.*, *GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Half of the Third Observing Run.*, Phys. Rev. X 13 (2023) 041039, <https://doi.org/10.1103/PhysRevX.13.041039>, arXiv:2111.03606.
- James B. Dent, William E. Gabella, Kelly Holley-Bockelmann, and Thomas W. Kephart, *Gravitational waves from a black hole orbiting in a wormhole geometry*, Phys. Rev. D **104** (2021) 044030, doi:10.1103/PhysRevD.104.044030.
- K. W. K. Wong, E. Berti, W. Gabella, and K. Holley-Bockelmann, *On the possibility of detecting ultrashort period exoplanets with LISA*, Mon. Not. Roy. Astron. Soc. **483** (2018) L33, doi:10.1093/mnrasl/sly208.
- E. M. Euliano, A. N. Hardcastle, C. M. Victoriano, W. E. Gabella, F. R. Haselton, and N. M. Adams, *Multiplexed Adaptive RT-PCR Based on L-DNA Hybridization Monitoring for Detection of Zika*,

- Dengue, and Chikungunya RNA*, Sci. Rep. **9** (2019) 11372, doi:10.1038/s41598-019-47862-6 .
- N. M. Adams, W. E. Gabella, A. N. Hardcastle, and F. R. Haselton, *Adaptive PCR Based on Hybridization Sensing of Mirror Image L-DNA*, Anal. Chem. **89** (2017) 728-735, doi:10.1021/acs.analchem.6b03291.
  - W. E. Gabella et al., *Generation and application of channeling x-rays using a novel, low-emittance electron beam—Status and Plans*, Nucl. Instrum. Meth. **B309** (2013) 10-14, doi:10.1016/j.nimb.2013.01.058.
  - CMS Collaboration, *Observation of a new boson at a mass of 125 GeV with the CMS experiment at the Large Hadron Collider*, Phys. Lett. **B716** (2012) 30-61, doi:10.1016/j.physletb.2012.08.021.

## Research Activities

### Polymerase Chain Reaction (PCR) Point-of-Care Thermocycler.....

- with Prof. Rick Haselton and Nick Spurlock, Vanderbilt University 2022–2024

Building and programming small thermocyclers to carry out real-time PCR amplification to test for various viruses and bacteria. Using custom code running on a Raspberry Pi computer to control the hardware and make the fluorescence measurements. Code base makes use of HTML, Javascript, Node.js, and C++.

### Gravitational waves, astrophysics, numerical simulations, and LIGO-LSC Collaboration.....

- with Prof. Kelly Holley-Bockelmann and Prof. Robert Weller, Vanderbilt University 2016–2022

Studies and estimates of gravitational wave strength from sources for LIGO and LISA, a space-based detector. Also exploring novel sources like black hole-wormhole gravitational waves. Using the Einstein Toolkit for numerical modeling of gravitational waves from binary black holes and other sources. As member of the LIGO Science Collaboration (LSC) analyzing heavy mass signals with the RIFT code pipeline, working to improve RIFT. Focus on heavy mass black holes that cannot form directly from stellar evolution—intermediate mass black holes.

### Polymerase Chain Reaction (PCR) DNA Amplification.....

- with Prof. Rick Haselton, Dr. Nicholas Adams, and Dr. David Wright, Vanderbilt University 2014–2018

Built and characterized compact instruments to perform DNA amplification using PCR where the hybridization state of the DNA is known by monitoring fluorescent dyes on L-DNA (left-handed and non-biological) of the same sequence. Built hardware, electronics, and programmed the LabVIEW control system. Also built hardware and wrote control software to amplify DNA using PCR, where magnetic beads are used to prepare the sample. Used the National Instruments' LabVIEW program, their real-time OS single-board RIO computer, for control, data acquisition, and operating a Qiagen fluorimeter.

### Discovery of the Higgs Boson at CMS.....

- with Prof. Will Johns, Dr. Gino Bolla, and Dr. Charles Newsom, Vanderbilt University 2008–2011

Member of the Compact Muon Solenoid detector collaboration at CERN prior to and during the discovery of the Higgs Boson particle. Safety officer for the Pixel subsystem and co-leader of the Tracker subsystem control software team, during first beams, first collisions, and the first colliding beam run. Collected data was used to discover the Higgs boson, the particle responsible for unification of the electromagnetic and weak nuclear forces.

### Electron emission from diamond needle(s).....

- with Prof. Charles Brau and Dr. Jonathan Jarvis, Vanderbilt University 2012–2014

Using diamond needle arrays or single diamond needles with tip radius around 6 nm to create electron beams either with larger current and beam size, or with exquisitely small size and small current, respectively. Collaborated with Fermi National Accelerator Laboratory's ASTA accelerator and Dr. Philippe Piot. Goal at ASTA to channel electrons in a crystal lattice to generate x-rays of well-defined

wavelengths for biological imaging.

### Compton Backscatter x-ray source.....

- *with Dr. Marcus Mendenhall and Gary Shearer*, FEL Center, Vanderbilt University 2005–2008

As chief scientist recommissioned and operated the Compton X-ray Source, a tunable x-ray device based on colliding a high-power laser with a relativistic electron beam. With Dr. Ed Donnelly and Dr. Frank Carroll performed experiments on phase contrast enhanced images.

### Vanderbilt Free-electron Laser.....

- *with Dr. Charles Brau and Dr. Marcus Mendenhall*, FEL Center, Vanderbilt University 1995–2005

As the Associate Director of the Vanderbilt Free-electron Center (FEL) was responsible for operations, maintenance, and scheduling of the FEL. Oversaw a 10 person team of technicians, engineers, and physicists. Carried out a half million dollar upgrade of the FEL in preparation for eye and brain surgeries—all were successful.

## Teaching & Mentoring

---

### Student mentoring.....

- *Mohammad Malik*, Vanderbilt University 2023–24

Co-faculty for graduate research in gravitational waves, using Mathematica tools and multipole expansions.

- *Ashley White*, Vanderbilt University 2023–24

Faculty for independent research in gravitational waves, with focus on using Post-Newtonian orbit codes, also exploring three-body orbits.

- *Joseph Rebak*, Vanderbilt University Spring 2022

Faculty for independent research in gravitational waves, especially using Mathematica tools.

- *Sammi Hamden*, Blackman High School, Murfreesboro, TN Fall 2019

Professional Advisor for his capstone project involving QuarkNet cosmic ray muon detectors.

- *Astrofield House*, Vanderbilt University Fall 2017–Spring 2018

Faculty Advisor for the Mayfield House *Astrofield*, student interest in astronomy and astrophysics, independent research into radio astronomy and pulsars, followed the Pulsar Search Collaboratory.

- *Justin Stevens*, Vanderbilt University Fall 2016–Spring 2019

Mentored discussions of astronomy and astrophysics, especially special and general relativity, and pulsars, followed the Pulsar Search Collaboratory.

- *Jake Sindelar*, Vanderbilt University Fall 2016–Spring 2017

Mentored discussions of astronomy and astrophysics, especially special and general relativity, and pulsars, followed the Pulsar Search Collaboratory.

### Lecturing.....

- Instructor at Ravenwood High School, Brentwood, TN Spring 2012

AP Physics and Astronomy

- Instructor at 2009 U.S. Particle Accelerator School, Vanderbilt University Jan 2009

*Introductory Accelerator Physics*

- Instructor in Physics & Astronomy, Vanderbilt University Fall 2006

Phys 116B, Second Semester Introductory Physics

- Instructor in Physics & Astronomy, Vanderbilt University Spring 2005

Senior Seminar, *Einstein's Legacy*

## Leadership & Professional Service

---

### Committees.....

- Laser Safety Committee, Vanderbilt University Spring 2020–Summer 2024

## Professional affiliations.....

- LISA Consortium, Member
- Professional Societies: APS, AMS, Sigma Xi, Tau Beta Pi, Sigma Pi Sigma

## Outreach & Media Engagement

---

### Outreach.....

- QuarkNET mentor for the high school particle physics program 2014-2024

These include mentoring high school science teachers for the NSF-DOE QuarkNet program, especially the use of muon detectors in the classroom. Responsible for the maintenance of three “in house” detectors that are loaned to high schools, as well as assisting teachers in the use and maintenance of their own cosmic ray muon detectors. Organize and host the Vanderbilt QuarkNet summer workshop to explore the use of the detectors, to enrich the physics curriculum, and to engage in other physics activities.

[Vanderbilt QuarkNet site](#) and [National site](#).

- Assisted QuarkNET mentor Prof. Med Webster 2011-2013

### Press/Media coverage.....

- *What happens if black holes fall into wormholes? A new way to find out.* Aug 2020

- *Could a black hole (hypothetically) fall into a (hypothetical) wormhole...* Aug 2020

Discussion of our paper on a black hole falling in and out of a wormhole, and the gravitational waves it would emit.

- *DNA duplicator small enough to hold in your hand* Jan 2017

Description of PCR instrument using left-handed (non-biological) DNA and the possibility to use the technique to make small, point-of-care tests for patient infection with bacteria or virus infections.

- *Free electron laser shines in first surgical test* Jan 2000

Description of first use of the FEL for the resection of a meningioma brain tumor.

## Skills

---

- **OS:** Linux/UNIX, Windows, MacOS, Raspian/Raspberry Pi
- **Programming:** PYTHON (advanced), C/C++, UNIX shell scripting, HTML, Javascript, Node.js, High-performance cluster computing, Open Science Grid high-throughput computing
- **Scientific:** PYTHON, Mathematica, Matlab
- **Control Systems/SCADA:** LabVIEW, PYTHON, PVSS/WinCC, Siemens Step 7 (PLC)
- **Typography:** L<sup>A</sup>T<sub>E</sub>X, Bibtex, Microsoft Office, LibreOffice

## Full Publication List

---

Gravitational Waves, LIGO (selected), & Astrophysics.....  
*Theoretical and computational investigation of novel GW sources, running the RIFT code to perform parameter estimation for high-mass LIGO signals.*

article:

*A Sea of Black Holes: Characterizing the LISA Signature for Stellar-Origin Black Hole Binaries.*

Krystal Ruiz-Rocha, Kelly Holley-Bockelmann, et al.

arXiv:2407.21161.

*Tests of General Relativity with the Compact Binary Signals from the LIGO–Virgo Catalog GWTC–3.*

The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott et al.

arXiv:2112.06861.

*GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Half of the Third Observing Run.*

The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott et al.

*Phys. Rev. X*, 13:041039, 2023.

<https://doi.org/10.1103/PhysRevX.13.041039>

arXiv:2111.03606.

*Search for continuous gravitational wave emission from the Milky Way center in O3 LIGO–Virgo data.*

The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott et al.

*Phys. Rev. D*, 106:042003–042026, 2022.

<https://link.aps.org/doi/10.1103/PhysRevD.106.042003>, arXiv:2204.04523.

*GWTC-2.1: Deep Extended Catalog of Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run.*

The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott et al.

*Phys. Rev. D*, 109:022001:1–45, 2024.

<https://doi.org/10.1103/PhysRevD.109.022001>

arXiv:2108.01045.

*Gravitational waves from a black hole orbiting in a wormhole geometry.*

James B. Dent, William E. Gabella, Kelly Holley-Bockelmann, and Thomas W. Kephart

*Phys. Rev. D*, 104:044030–044037, 2021.

<https://doi.org/10.1103/PhysRevD.104.044030>, arXiv:2007.09135.

*Building a Field: The Future of Astronomy with Gravitational Waves (Astro2020 contribution).*

Kelly Holley-Bockelmann, et al.

*Bull. of the AAS*, 51:7, 2019.

<https://baas.aas.org/pub/2020n7i228>, arxiv:1912.07642.

*On the possibility of detecting ultrashort period exoplanets with LISA.*

Kaze W. K. Wong, Emanuele Berti, William E. Gabella, and Kelly Holley-Bockelmann.

*Mon. Not. Roy. Astron. Soc.*, 483(1):L33–L36, 2019.

<https://doi.org/10.1093/mnrasl/sly208>, arXiv:1808.07055.

software:

*The Einstein Toolkit, release Bernhard Riemann, ET\_2022.05.*

Steven R. Brandt, et al.

<https://zenodo.org/records/6588641>, May 31, 2022.

Also previous versions: *Johnson, ET\_2021.11*; *Lorentz, ET\_2021.05*; *DeWitt-Morette, ET\_2020.11*; *Turing, ET\_2020.05*.

unpublished:

*Music of the Spheres: the gravitational wave signal from exoplanets.*

Gabella, William and Breivik, Katelyn and Gomez Maqueo Chew, Yilen and Holley-Bockelmann, Kelly and Kamai, Brittany.

APS April Meeting, 2017.

Biomedical Engineering, PCR, Adaptive PCR.....  
*Built instruments, both hardware and software control, to perform PCR amplification for bacteria and viral genome amplification and detection.*

## article:

- Fuorophore-quencher interactions effect on hybridization characteristics of complementary oligonucleotides.*  
 Nicholas Spurlock, William E. Gabella, Dalton J. Nelson, David T. Evans, Megan E. Pask, Jonathan E. Schmitz, and Frederick Haselton.  
*Anal. Methods*, 11:2862–2867, 2019.  
<https://doi.org/10.1039/D4AY00083H>.
- Fuorophore-quencher interactions effect on hybridization characteristics of complementary oligonucleotides.*  
 Zackary A. Zimmers, Nicholas M. Adams, William E. Gabella, and Frederick R. Haselton.  
*Anal. Methods*, 11:2862–2867, 2019.  
<https://dx.doi.org/10.1039/C9AY00584F>, doi:10.1039/C9AY00584F.
- Multiplexed Adaptive RT-PCR Based on L-DNA Hybridization Monitoring for the Detection of Zika, Dengue, and Chikungunya RNA.*  
 Erin M. Euliano, Austin N. Hardcastle, Cristia M. Victoriano, William E. Gabella, Frederick R. Haselton, and Nicholas M. Adams.  
*Scientific Reports*, 9:11372, 2019.  
<https://doi.org/10.1038/s41598-019-47862-6>, doi:10.1038/s41598-019-47862-6.
- Adaptive PCR Based on Hybridization Sensing of Mirror-Image L-DNA.*  
 Nicholas M. Adams, William E. Gabella, Austin N. Hardcastle, and Frederick R. Haselton.  
*Anal. Chem.*, 89:728, 2017.  
 doi:10.1021/acs.analchem.6b03291.

## Free-electron Lasers &amp; Accelerator Physics.....

Associate Director for Operations of the Vanderbilt FEL, software and hardware support, support on various experiments.

## PhD thesis:

- Numerical solution of the Hamilton-Jacobi equation in 2 1/2 degrees of freedom.*  
 William E. Gabella.  
 PhD thesis, University of Colorado, Boulder, CO, 1991.  
 Copyright - Database copyright ProQuest LLC; ProQuest does not claim copyright in the individual underlying works; Last updated - 2019-10-17.  
<http://login.proxy.library.vanderbilt.edu/login?url=https://search.proquest.com/docview/303991081?accountid=14816>.

## article:

- Operation of an Ungated Diamond Field-Emission Array Cathode in a L-Band Radiofrequency Electron Source.*  
 P. Piot and others.  
*Appl. Phys. Lett.*, 104:263504, 2014.  
 arXiv:1402.6999, doi:10.1063/1.4884375.
- Beam-Dynamics Simulations for Channeling Radiation Electron Source.*  
 D. Mihalcea, C. A. Brau, B. K. Choi, W. Gabella, J. D. Jarvis, J. W. Lewellen, M. Mendenhall, and P. Piot.  
*Phys. Procedia*, 52:7–13, 2014.  
 doi:10.1016/j.phpro.2014.06.003.
- Generation and application of channeling X-rays using a novel, low-emittance electron beam-Status and plans.*  
 W. E. Gabella, C. A. Brau, B. K. Choi, B. Ivanov, J. D. Jarvis, M. H. Mendenhall, P. Piot, D. Mihalcea, R. Carrigan, and W. Wagner.  
*Nucl. Instrum. Meth.*, B309:10–14, 2013.  
 doi:10.1016/j.nimb.2013.01.058.
- R&D Toward a Compact High-Brilliance X-Ray Source Based on Channeling Radiation.*  
 P. Piot, C. A. Brau, B. K. Choi, W. E. Gabella, J. D. Jarvis, M. H. Mendenhall, J. W. Lewellen, and D. Mihalcea.  
*AIP Conf. Proc.*, 1507:734–739, 2012.  
 doi:10.1063/1.4773789.
- Free electron laser based biophysical and biomedical instrumentation.*  
 G. S. Edwards and others.  
*Rev. Sci. Instrum.*, 74:3207–3245, 2003.  
 doi:10.1063/1.1584078.
- Beam extraction studies at 900-GeV using a channeling crystal.*  
 Richard A. Carrigan, Jr. and others.



- Phys. Rev. ST Accel. Beams*, 5:043501, 2002.  
doi:10.1103/PhysRevSTAB.5.043501.  
[First observation of luminosity driven extraction using channeling with a bent crystal.](#)  
A. Asseev and others.  
*Phys. Rev. ST Accel. Beams*, 1:022801, 1998.  
doi:10.1103/PhysRevSTAB.1.022801.  
[First results from bent crystal extraction at the Fermilab Tevatron.](#)  
C. T. Murphy and others.  
*Nucl. Instrum. Meth.*, B119:231–238, 1996.  
doi:10.1016/0168-583X(96)00356-4.  
[Plasma lens experiments at the final focus test beam.](#)  
W. Barletta and others.  
*AIP Conf. Proc.*, 335:606–611, 1995.  
doi:10.1063/1.48298.  
[Extraction from TeV range accelerators using bent crystal channeling.](#)  
Richard A. Carrigan, Jr. and others.  
*Nucl. Instrum. Meth.*, B90:128–132, 1994.  
doi:10.1016/0168-583X(94)95527-1.  
[Experimental study of synchro-betatron coupling induced by dipole modulation.](#)  
M. Syphers and others.  
*Phys. Rev. Lett.*, 71:719–722, 1993.  
doi:10.1103/PhysRevLett.71.719.  
[Experimental Simulation of Ground Motion Effects.](#)  
M. J. Syphers and others.  
*Conf. Proc.*, C930517:420–422, 1993.  
[Plasma lens experiments at the final focus test beam.](#)  
B. Barletta and others.  
*Conf. Proc.*, C930517:2638–2640, 1993.  
[Driven response of the synchrotron motion of a beam.](#)  
M. Ellison and others.  
*Phys. Rev. Lett.*, 70:591–594, 1993.  
doi:10.1103/PhysRevLett.70.591.  
[RF voltage modulation at discrete frequencies, for application to proton extraction using crystal channeling.](#)  
W. E. Gabella, J. Rosenzweig, R. Kick, and Stephen G. Peggs.  
*Conf. Proc.*, C930517:233–235, 1993.  
[Issues regarding acceleration in crystals.](#)  
Pisin Chen, David B. Cline, and William E. Gabella.  
*AIP Conf. Proc.*, 279:877–887, 1993.  
doi:10.1063/1.44051.  
[RF voltage modulation at discrete frequencies with applications to crystal channeling extraction.](#)  
W. Gabella, J. Rosenzweig, R. Kick, and Stephen G. Peggs.  
*Part. Accel.*, 42:235–257, 1993.  
[Iterative determination of invariant tori for time periodic Hamiltonian with two degrees of freedom.](#)  
W. E. Gabella, R. D. Ruth, and Robert Lee Warnock.  
*Phys. Rev.*, A46:3493–3512, 1992.  
doi:10.1103/PhysRevA.46.3493.  
[Refinement of the Hamiltonian-Jacobi solution using a second canonical transformation.](#)  
in *proceedings*:  
W. E. Gabella, R. D. Ruth, and Robert Lee Warnock.  
*Conf. Proc.*, C910506:1591–1593, 1991.  
[A Damping Ring Design for Future Linear Colliders.](#)  
T. Raubenheimer, W. E. Gabella, P. L. Morton, Martin J. Lee, L. Z. Rivkin, and R. D. Ruth.  
*Conf. Proc.*, C8903201:1316, 1989.  
[Beam Dynamics with the Hamilton Jacobi Equation.](#)  
W. E. Gabella, R. D. Ruth, and R. L. Warnock.  
*Conf. Proc.*, C8903201:1310, 1989.  
[Beam Dynamics with the Hamiltonian-Jacobi Equation.](#)  
W. E. Gabella, R. D. Ruth, and Robert Lee Warnock.

*Conf. Proc.*, C8903201:1310–1312, 1989.

[Methods of Stability Analysis in Nonlinear Mechanics.](#)

Robert Lee Warnock, R. D. Ruth, W. E. Gabella, and Karl M. Ecklund.

*AIP Conf. Proc.*, 184:995–1014, 1989. doi:10.1063/1.38055.

[Planned High-brightness Channeling Radiation Experiment at Fermilab's Advanced Superconducting Test Accelerator.](#)

Ben Blomberg and others.

In *Proceedings, 5th International Particle Accelerator Conference (IPAC 2014)*, TUPME044. 2014.

<http://jacow.org/IPAC2014/papers/tupme044.pdf>.

[Channeling Radiation with Low-Energy Electron Beams: Experimental Plans & Status at FERMILAB.](#)

B. Blomberg, C. A. Brau, B. K. Choi, W. E. Gabella, B. Ivanov, M. Mendenhall, D. Milhalcea, H. Panuganti, P. Piot, and W. Wagner.

In *35th International Free-Electron Laser Conference Manhattan, NY, USA, August 26-30, 2013*. 2013.

<http://lss.fnal.gov/archive/2013/conf/fermilab-conf-13-468-apc.pdf>.

[A sealed-off strontium vapor laser.](#)

Anatoly N. Soldatov, Alexander G. Filonov, Alexei S. Shumeiko, Anatoly E. Kirilov, Borislav L. Ivanov, Richard F. Haglund Jr., Marcus H. Mendenhall, William E. Gabella, and Ivan Z. Kostadinov.

In Victor F. Tarasenko, editor, *Atomic and Molecular Pulsed Lasers V*, volume 5483, 252 – 261. International Society for Optics and Photonics, SPIE, 2004.

<https://doi.org/10.1117/12.562984>, doi:10.1117/12.562984.

[Electron beam diagnostics using diffraction radiation.](#)

B. Feng, W. E. Gabella, S. E. Csorna, and T. R. Sashalmi.

In *Free electron lasers. Proceedings, 26th International Conference, FEL 2004, and 11th FEL Users Workshop, Trieste, Italy, August 29-September 3, 2004*, 546–549. 2004.

<http://accelconf.web.cern.ch/AccelConf/f04/papers/TUP0S58/TUP0S58.PDF>.

[Mid-infrared FEL absorption spectra.](#)

John A. Kozub, Bibo Feng, and William E. Gabella.

In Joseph Neev, Andreas Ostendorf, Glenn S. Edwards, Joseph Neev, Andreas Ostendorf, and John Clark Sutherland, editors, *Commercial and Biomedical Applications of Ultrafast and Free-Electron Lasers*, volume 4633, 162 – 171. International Society for Optics and Photonics, SPIE, 2002.

<https://doi.org/10.1117/12.461376>, doi:10.1117/12.461376.

[Measurements of the spectral and temporal evolution of FEL macropulses.](#)

John A. Kozub, Bibo Feng, and William E. Gabella.

In Joseph Neev, Andreas Ostendorf, Glenn S. Edwards, Joseph Neev, Andreas Ostendorf, and John Clark Sutherland, editors, *Commercial and Biomedical Applications of Ultrafast and Free-Electron Lasers*, volume 4633, 153 – 161. International Society for Optics and Photonics, SPIE, 2002.

<https://doi.org/10.1117/12.461375>, doi:10.1117/12.461375.

[On an asymmetric correlated flavor factory.](#)

D. Cline, A. Boden, W. Gabella, A. Garren, and X. Wang.

In *Proceedings of the 1993 Particle Accelerator Conference (PAC 93)*, volume C930517, 2051–2053. 1993.

[Discrete modulations of the RF as a tool for controlling proton diffusion.](#)

W. Gabella, J. Rosenzweig, R. Kick, and Stephen G. Peggs.

In *The Fermilab Meeting DPF 92. Proceedings, 7th Meeting of the American Physical Society, Division of Particles and Fields, Batavia, USA, November 10-14, 1992. Vol. 1, 2*, 1610–1614. 1992.

[Betatron coupling correction at the IUCF cooler, leading to improved determination of fourth-order resonance Hamiltonian.](#)

M. Ellison and others.

In *Stability of Particle Motion in Storage Rings Upton, New York, October 18-24, 1992*. 1992.

[Longitudinal phase space measurements at IUCF.](#)

D. D. Caussyn and others.

In *Stability of Particle Motion in Storage Rings Upton, New York, October 18-24, 1992*. 1992.

[Computation of invariant tori in 2 1/2 degrees of freedom.](#)

W. E. Gabella, R. D. Ruth, and Robert Lee Warnock.

In *US / Japan Workshop on Nonlinear Dynamics and Particle Acceleration Tsukuba, Japan, October 22-25, 1990*. 1991.

<http://www-public.slac.stanford.edu/sciDoc/docMeta.aspx?slacPubNumber=SLAC-PUB-5414>.

[A damping ring design for future linear colliders.](#)



T. O. Raubenheimer, W. E. Gabella, P. L. Morton, M. J. Lee, L. Z. Rivkin, and R. D. Ruth.  
In *Proceedings of the 1989 IEEE Particle Accelerator Conference*, . 'Accelerator Science and Technology,  
volume, 1316–1318 vol.2. March 1989.  
doi:10.1109/PAC.1989.73434.

*Periodic Solutions of the Hamilton-Jacobi Equation by the Shooting Method: a Technique for Beam Dynamics.*  
W. E. Gabella, R. D. Ruth, and Robert Lee Warnock.

In *2nd ICFA Advanced Beam Dynamics Workshop Lugano, Switzerland, April 11-16, 1988*. 1988.  
<http://www-public.slac.stanford.edu/sciDoc/docMeta.aspx?slacPubNumber=SLAC-PUB-4626>.

*Bunch Lengthening in the SLC Damping Ring.*

L. Z. Rivkin and others.

In *Particle accelerator. Proceedings, 1st EPAC Conference, Rome, Italy, June 7-11, 1988*. Vol. 1, 2. 1988.  
<http://www-public.slac.stanford.edu/sciDoc/docMeta.aspx?slacPubNumber=SLAC-PUB-4645>.

*Symplectic Maps for Accelerator Lattices.*

Robert Lee Warnock, R. D. Ruth, and W. E. Gabella.

In *Workshop on Symplectic Integration, Los Alamos, NM, USA, March 19-21, 1988, CONF-8803122-1*. 1988.  
<http://www-public.slac.stanford.edu/sciDoc/docMeta.aspx?slacPubNumber=SLAC-PUB-4627>.

unpublished:

*Proposal for plasma lens experiments at the Final Focus Test Beam.*

W. Barletta and others.

proposal for experiment, 1993.

*A Design of a compact superconducting x-ray source.*

David Cline, William Gabella, Alper Garren, James Kolonko, and David Robin.

pre-proposal for x-rays by channeling radiation, 1993.

## Compact Muon Solenoid (CMS) & Particle Physics.....

*Supported detector operation, hardware, data collection, co-leader for the Tracker control system and safety officer for the Pixel sub-system.*

article:

*Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC.*

Serguei Chatrchyan and others.

*Phys. Lett.*, B716:30–61, 2012.

arXiv:1207.7235, doi:10.1016/j.physletb.2012.08.021.

*Performance of CMS muon reconstruction in pp collision events at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*JINST*, 7:P10002, 2012.

arXiv:1206.4071, doi:10.1088/1748-0221/7/10/P10002.

*Shape, Transverse Size, and Charged Hadron Multiplicity of Jets in pp Collisions at 7 TeV.*

Serguei Chatrchyan and others.

*JHEP*, 06:160, 2012.

arXiv:1204.3170, doi:10.1007/JHEP06(2012)160.

*Measurement of the  $Z/\gamma^* + b$ -jet cross section in pp collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*JHEP*, 06:126, 2012.

arXiv:1204.1643, doi:10.1007/JHEP06(2012)126.

*Measurement of the underlying event in the Drell-Yan process in proton-proton collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Eur. Phys. J.*, C72:2080, 2012.

arXiv:1204.1411, doi:10.1140/epjc/s10052-012-2080-4.

*Ratios of dijet production cross sections as a function of the absolute difference in rapidity between jets in proton-proton collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Eur. Phys. J.*, C72:2216, 2012.

arXiv:1204.0696, doi:10.1140/epjc/s10052-012-2216-6.

*Measurement of the cross section for production of  $b\bar{b}X$ , decaying to muons in pp collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*JHEP*, 06:110, 2012.

- arXiv:1203.3458, doi:10.1007/JHEP06(2012)110.  
[Search for microscopic black holes in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*JHEP*, 04:061, 2012.
- arXiv:1202.6396, doi:10.1007/JHEP04(2012)061.  
[Search for quark compositeness in dijet angular distributions from  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*JHEP*, 05:055, 2012.
- arXiv:1202.5535, doi:10.1007/JHEP05(2012)055.  
[Inclusive  \$b\$ -jet production in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*JHEP*, 04:084, 2012.
- arXiv:1202.4617, doi:10.1007/JHEP04(2012)084.  
[Search for the standard model Higgs boson decaying to bottom quarks in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B710:284–306, 2012.
- arXiv:1202.4195, doi:10.1016/j.physletb.2012.02.085.  
[Search for neutral Higgs bosons decaying to tau pairs in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B713:68–90, 2012.
- arXiv:1202.4083, doi:10.1016/j.physletb.2012.05.028.  
[Search for large extra dimensions in dimuon and dielectron events in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B711:15–34, 2012.
- arXiv:1202.3827, doi:10.1016/j.physletb.2012.03.029.  
[Search for the standard model Higgs boson in the  \$H\$  to  \$ZZ\$  to  \$2\ell 2\nu\$  channel in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*JHEP*, 03:040, 2012.
- arXiv:1202.3478, doi:10.1007/JHEP03(2012)040.  
[Search for the standard model Higgs boson in the  \$H\$  to  \$ZZ\$  to  \$\ell\ell\tau\tau\$  decay channel in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*JHEP*, 03:081, 2012.
- arXiv:1202.3617, doi:10.1007/JHEP03(2012)081.  
[Study of high- \$p\_T\$  charged particle suppression in  \$PbPb\$  compared to  \$pp\$  collisions at  \$\sqrt{s\_{NN}} = 2.76\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Eur. Phys. J.*, C72:1945, 2012.
- arXiv:1202.2554, doi:10.1140/epjc/s10052-012-1945-x.  
[Search for the standard model Higgs boson in the decay channel  \$H\$  to  \$ZZ\$  to 4 leptons in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 108:111804, 2012.
- arXiv:1202.1997, doi:10.1103/PhysRevLett.108.111804.  
[Search for the standard model Higgs boson decaying to  \$W^+W^-\$  in the fully leptonic final state in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B710:91–113, 2012.
- arXiv:1202.1489, doi:10.1016/j.physletb.2012.02.076.  
[Combined results of searches for the standard model Higgs boson in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B710:26–48, 2012.
- arXiv:1202.1488, doi:10.1016/j.physletb.2012.02.064.  
[Search for the standard model Higgs boson decaying into two photons in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B710:403–425, 2012.
- arXiv:1202.1487, doi:10.1016/j.physletb.2012.03.003.  
[Search for a Higgs boson in the decay channel  \$H \rightarrow ZZ^{\(\*\)} \rightarrow q \bar{q} \ell^- \ell^+\$  in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 04:036, 2012.  
 arXiv:1202.1416, doi:10.1007/JHEP04(2012)036.  
[Measurement of the inclusive production cross sections for forward jets and for dijet events with one forward and one central jet in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 06:036, 2012.  
 arXiv:1202.0704, doi:10.1007/JHEP06(2012)036.  
[Suppression of non-prompt  \$J/\psi\$ , prompt  \$J/\psi\$ , and  \$Y\(1S\)\$  in PbPb collisions at  \$\sqrt{s\_{NN}} = 2.76\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 05:063, 2012.  
 arXiv:1201.5069, doi:10.1007/JHEP05(2012)063.  
[Centrality dependence of dihadron correlations and azimuthal anisotropy harmonics in PbPb collisions at  \$\sqrt{s\_{NN}} = 2.76\$  TeV.](#)

Serguei Chatrchyan and others.  
*Eur. Phys. J.*, C72:2012, 2012.  
 arXiv:1201.3158, doi:10.1140/epjc/s10052-012-2012-3.  
[Measurement of isolated photon production in  \$pp\$  and PbPb collisions at  \$\sqrt{s\_{NN}} = 2.76\$  TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Lett.*, B710:256–277, 2012.  
 arXiv:1201.3093, doi:10.1016/j.physletb.2012.02.077.  
[A New Boson with a Mass of 125 GeV Observed with the CMS Experiment at the Large Hadron Collider.](#)

Serguei Chatrchyan and others.  
*Science*, 338:1569–1575, 2012.  
 doi:10.1126/science.1230816.  
[Measurement of the charge asymmetry in top-quark pair production in proton-proton collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Lett.*, B709:28–49, 2012.  
 arXiv:1112.5100, doi:10.1016/j.physletb.2012.01.078.  
[Search for signatures of extra dimensions in the diphoton mass spectrum at the Large Hadron Collider.](#)

Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 108:111801, 2012.  
 arXiv:1112.0688, doi:10.1103/PhysRevLett.108.111801.  
[Exclusive photon-photon production of muon pairs in proton-proton collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 01:052, 2012.  
 arXiv:1111.5536, doi:10.1007/JHEP01(2012)052.  
 [\$J/\psi\$  and  \$\psi\(2S\)\$  production in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 02:011, 2012.  
 arXiv:1111.1557, doi:10.1007/JHEP02(2012)011.  
[Measurement of the Production Cross Section for Pairs of Isolated Photons in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 01:133, 2012.  
 arXiv:1110.6461, doi:10.1007/JHEP01(2012)133.  
[Measurement of the Rapidity and Transverse Momentum Distributions of  \$Z\$  Bosons in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Rev.*, D85:032002, 2012.  
 arXiv:1110.4973, doi:10.1103/PhysRevD.85.032002.  
[Jet Production Rates in Association with  \$W\$  and  \$Z\$  Bosons in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 01:010, 2012.  
 arXiv:1110.3226, doi:10.1007/JHEP01(2012)010.  
[Forward Energy Flow, Central Charged-Particle Multiplicities, and Pseudorapidity Gaps in  \$W\$  and  \$Z\$  Boson Events from  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*Eur. Phys. J.*, C72:1839, 2012.  
 arXiv:1110.0181, doi:10.1140/epjc/s10052-011-1839-3.  
[Performance of tau-lepton reconstruction and identification in CMS.](#)

Serguei Chatrchyan and others.  
*JINST*, 7:P01001, 2012.  
 arXiv:1109.6034, doi:10.1088/1748-0221/7/01/P01001.  
[Inclusive search for squarks and gluinos in pp collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Rev.*, D85:012004, 2012.  
 arXiv:1107.1279, doi:10.1103/PhysRevD.85.012004.  
[Measurement of the weak mixing angle with the Drell-Yan process in proton-proton collisions at the LHC.](#)

Serguei Chatrchyan and others.  
*Phys. Rev.*, D84:112002, 2011.  
 arXiv:1110.2682, doi:10.1103/PhysRevD.84.112002.  
[Measurement of energy flow at large pseudorapidities in pp collisions at  \$\sqrt{s} = 0.9\$  and 7 TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 11:148, 2011.  
 [Erratum: *JHEP*02,055(2012), [https://doi.org/10.1007/JHEP02\(2012\)055](https://doi.org/10.1007/JHEP02(2012)055)].  
 arXiv:1110.0211, doi:10.1007/JHEP11(2011)148.  
[Search for a Vector-like Quark with Charge 2/3 in  \$t + Z\$  Events from pp Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:271802, 2011.  
 arXiv:1109.4985, doi:10.1103/PhysRevLett.107.271802.  
[Search for Supersymmetry at the LHC in Events with Jets and Missing Transverse Energy.](#)

Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:221804, 2011.  
 arXiv:1109.2352, doi:10.1103/PhysRevLett.107.221804.  
[Measurement of the  \$t\bar{t}\$  Production Cross Section in pp Collisions at 7 TeV in Lepton + Jets Events Using b-quark Jet Identification.](#)

Serguei Chatrchyan and others.  
*Phys. Rev.*, D84:092004, 2011.  
 arXiv:1108.3773, doi:10.1103/PhysRevD.84.092004.  
[Measurement of the Differential Cross Section for Isolated Prompt Photon Production in pp Collisions at 7 TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Rev.*, D84:052011, 2011.  
 arXiv:1108.2044, doi:10.1103/PhysRevD.84.052011.  
[Measurement of the Drell-Yan Cross Section in pp Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 10:007, 2011.  
 arXiv:1108.0566, doi:10.1007/JHEP10(2011)007.  
[Search for  \$B\(s\)\$  and  \$B\$  to dimuon decays in pp collisions at 7 TeV.](#)

Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:191802, 2011.  
 arXiv:1107.5834, doi:10.1103/PhysRevLett.107.191802.  
[Search for Resonances in the Dijet Mass Spectrum from 7 TeV pp Collisions at CMS.](#)

Serguei Chatrchyan and others.  
*Phys. Lett.*, B704:123–142, 2011.  
 arXiv:1107.4771, doi:10.1016/j.physletb.2011.09.015.  
[Measurement of the Inclusive  \$W\$  and  \$Z\$  Production Cross Sections in pp Collisions at  \$\sqrt{s} = 7\$  TeV.](#)

Serguei Chatrchyan and others.  
*JHEP*, 10:132, 2011.  
 arXiv:1107.4789, doi:10.1007/JHEP10(2011)132.  
[Dependence on pseudorapidity and centrality of charged hadron production in PbPb collisions at a nucleon-nucleon centre-of-mass energy of 2.76 TeV.](#)

Serguei Chatrchyan and others.

*JHEP*, 08:141, 2011.  
arXiv:1107.4800, doi:10.1007/JHEP08(2011)141.  
[Determination of Jet Energy Calibration and Transverse Momentum Resolution in CMS.](#)  
Serguei Chatrchyan and others.  
*JINST*, 6:P11002, 2011.  
arXiv:1107.4277, doi:10.1088/1748-0221/6/11/P11002.  
[Search for Three-Jet Resonances in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:101801, 2011.  
arXiv:1107.3084, doi:10.1103/PhysRevLett.107.101801.  
[Search for supersymmetry in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV in events with a single lepton, jets, and missing transverse momentum.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 08:156, 2011.  
arXiv:1107.1870, doi:10.1007/JHEP08(2011)156.  
[A search for excited leptons in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*Phys. Lett.*, B704:143–162, 2011.  
arXiv:1107.1773, doi:10.1016/j.physletb.2011.09.021.  
[Measurement of the Underlying Event Activity at the LHC with  \$\sqrt{s} = 7\$  TeV and Comparison with  \$\sqrt{s} = 0.9\$  TeV.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 09:109, 2011.  
arXiv:1107.0330, doi:10.1007/JHEP09(2011)109.  
[Missing transverse energy performance of the CMS detector.](#)  
Serguei Chatrchyan and others.  
*JINST*, 6:P09001, 2011.  
arXiv:1106.5048, doi:10.1088/1748-0221/6/09/P09001.  
[Search for New Physics with a Mono-Jet and Missing Transverse Energy in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:201804, 2011.  
arXiv:1106.4775, doi:10.1103/PhysRevLett.107.201804.  
[Search for New Physics with Jets and Missing Transverse Momentum in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 08:155, 2011.  
arXiv:1106.4503, doi:10.1007/JHEP08(2011)155.  
[Measurement of the Strange  \$B\$  Meson Production Cross Section with  \$J/\Psi\$  Decays in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*Phys. Rev.*, D84:052008, 2011.  
arXiv:1106.4048, doi:10.1103/PhysRevD.84.052008.  
[Search for Supersymmetry in Events with  \$b\$  Jets and Missing Transverse Momentum at the LHC.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 07:113, 2011.  
arXiv:1106.3272, doi:10.1007/JHEP07(2011)113.  
[Measurement of the  \$t\$ -channel single top quark production cross section in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 107:091802, 2011.  
arXiv:1106.3052, doi:10.1103/PhysRevLett.107.091802.  
[Search for Light Resonances Decaying into Pairs of Muons as a Signal of New Physics.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 07:098, 2011.  
arXiv:1106.2375, doi:10.1007/JHEP07(2011)098.  
[Search for Same-Sign Top-Quark Pair Production at  \$\sqrt{s} = 7\$  TeV and Limits on Flavour Changing Neutral Currents in the Top Sector.](#)  
Serguei Chatrchyan and others.  
*JHEP*, 08:005, 2011.

arXiv:1106.2142, doi:10.1007/JHEP08(2011)005.

*Measurement of the Top-antitop Production Cross Section in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV using the Kinematic Properties of Events with Leptons and Jets.*

Serguei Chatrchyan and others.

*Eur. Phys. J.*, C71:1721, 2011.

arXiv:1106.0902, doi:10.1140/epjc/s10052-011-1721-3.

*Search for physics beyond the standard model using multilepton signatures in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Phys. Lett.*, B704:411–433, 2011.

arXiv:1106.0933, doi:10.1016/j.physletb.2011.09.047.

*Measurement of the ratio of the 3-jet to 2-jet cross sections in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Phys. Lett.*, B702:336–354, 2011.

arXiv:1106.0647, doi:10.1016/j.physletb.2011.07.067.

*Measurement of the Inclusive Jet Cross Section in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Phys. Rev. Lett.*, 107:132001, 2011.

arXiv:1106.0208, doi:10.1103/PhysRevLett.107.132001.

*Measurement of the  $t\bar{t}$  production cross section and the top quark mass in the dilepton channel in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*JHEP*, 07:049, 2011.

arXiv:1105.5661, doi:10.1007/JHEP07(2011)049.

*Search for First Generation Scalar Leptoquarks in the  $e\bar{e}j$  channel in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Phys. Lett.*, B703:246–266, 2011.

arXiv:1105.5237, doi:10.1016/j.physletb.2011.07.089.

*Indications of suppression of excited states in PbPb collisions at  $\sqrt{S_{NN}} = 2.76$  TeV.*

Serguei Chatrchyan and others.

*Phys. Rev. Lett.*, 107:052302, 2011.

arXiv:1105.4894, doi:10.1103/PhysRevLett.107.052302.

*Search for supersymmetry in events with a lepton, a photon, and large missing transverse energy in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*JHEP*, 06:093, 2011.

arXiv:1105.3152, doi:10.1007/JHEP06(2011)093.

*Measurement of  $W\gamma$  and  $Z\gamma$  production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Serguei Chatrchyan and others.

*Phys. Lett.*, B701:535–555, 2011.

arXiv:1105.2758, doi:10.1016/j.physletb.2011.06.034.

*Long-range and short-range dihadron angular correlations in central PbPb collisions at a nucleon-nucleon center of mass energy of 2.76 TeV.*

Serguei Chatrchyan and others.

*JHEP*, 07:076, 2011.

arXiv:1105.2438, doi:10.1007/JHEP07(2011)076.

*Measurement of the Polarization of  $W$  Bosons with Large Transverse Momenta in  $W$ +Jets Events at the LHC.*

Serguei Chatrchyan and others.

*Phys. Rev. Lett.*, 107:021802, 2011.

arXiv:1104.3829, doi:10.1103/PhysRevLett.107.021802.

*Charged particle transverse momentum spectra in  $pp$  collisions at  $\sqrt{s} = 0.9$  and 7 TeV.*

Serguei Chatrchyan and others.

*JHEP*, 08:086, 2011.

arXiv:1104.3547, doi:10.1007/JHEP08(2011)086.

*Search for new physics with same-sign isolated dilepton events with jets and missing transverse energy at the LHC.*

Serguei Chatrchyan and others.

*JHEP*, 06:077, 2011.



arXiv:1104.3168, doi:10.1007/JHEP06(2011)077.  
*Measurement of the  $B^0$  production cross section in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 106:252001, 2011.  
 arXiv:1104.2892, doi:10.1103/PhysRevLett.106.252001.  
*Measurement of the differential dijet production cross section in proton-proton collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B700:187–206, 2011.  
 arXiv:1104.1693, doi:10.1016/j.physletb.2011.05.027.  
*Measurement of the Inclusive  $Z$  Cross Section via Decays to Tau Pairs in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*JHEP*, 08:117, 2011.  
 arXiv:1104.1617, doi:10.1007/JHEP08(2011)117.  
*Search for Neutral MSSM Higgs Bosons Decaying to Tau Pairs in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 106:231801, 2011.  
 arXiv:1104.1619, doi:10.1103/PhysRevLett.106.231801.  
*Search for Large Extra Dimensions in the Diphoton Final State at the Large Hadron Collider.*  
 Serguei Chatrchyan and others.  
*JHEP*, 05:085, 2011.  
 arXiv:1103.4279, doi:10.1007/JHEP05(2011)085.  
*Measurement of the lepton charge asymmetry in inclusive  $W$  production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*JHEP*, 04:050, 2011.  
 arXiv:1103.3470, doi:10.1007/JHEP04(2011)050.  
*Search for Physics Beyond the Standard Model in Opposite-Sign Dilepton Events at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*JHEP*, 06:026, 2011.  
 arXiv:1103.1348, doi:10.1007/JHEP06(2011)026.  
*Search for Supersymmetry in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV in Events with Two Photons and Missing Transverse Energy.*  
 Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 106:211802, 2011.  
 arXiv:1103.0953, doi:10.1103/PhysRevLett.106.211802.  
*Search for Resonances in the Dilepton Mass Distribution in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*JHEP*, 05:093, 2011.  
 arXiv:1103.0981, doi:10.1007/JHEP05(2011)093.  
*Search for a  $W'$  boson decaying to a muon and a neutrino in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B701:160–179, 2011.  
 arXiv:1103.0030, doi:10.1016/j.physletb.2011.05.048.  
*Measurement of  $W^+W^-$  production and search for the Higgs boson in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B699:25–47, 2011.  
 arXiv:1102.5429, doi:10.1016/j.physletb.2011.03.056.  
*Study of  $Z$  boson production in PbPb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Rev. Lett.*, 106:212301, 2011.  
 arXiv:1102.5435, doi:10.1103/PhysRevLett.106.212301.  
*Search for a Heavy Bottom-like Quark in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*  
 Serguei Chatrchyan and others.  
*Phys. Lett.*, B701:204–223, 2011.  
 arXiv:1102.4746, doi:10.1016/j.physletb.2011.05.074.  
*Strange Particle Production in  $pp$  Collisions at  $\sqrt{s} = 0.9$  and 7 TeV.*  
 Vardan Khachatryan and others.  
*JHEP*, 05:064, 2011.

arXiv:1102.4282, doi:10.1007/JHEP05(2011)064.

*Measurement of  $B\bar{B}$  Angular Correlations based on Secondary Vertex Reconstruction at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*JHEP*, 03:136, 2011.

arXiv:1102.3194, doi:10.1007/JHEP03(2011)136.

*Measurement of Dijet Angular Distributions and Search for Quark Compositeness in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 106:201804, 2011.

arXiv:1102.2020, doi:10.1103/PhysRevLett.106.201804.

*Observation and studies of jet quenching in PbPb collisions at nucleon-nucleon center-of-mass energy = 2.76 TeV.*

Serguei Chatrchyan and others.

*Phys. Rev.*, C84:024906, 2011.

arXiv:1102.1957, doi:10.1103/PhysRevC.84.024906.

*First Measurement of Hadronic Event Shapes in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Lett.*, B699:48–67, 2011.

arXiv:1102.0068, doi:10.1016/j.physletb.2011.03.060.

*Dijet Azimuthal Decorrelations in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 106:122003, 2011.

arXiv:1101.5029, doi:10.1103/PhysRevLett.106.122003.

*Inclusive  $b$ -hadron production cross section with muons in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*JHEP*, 03:090, 2011.

arXiv:1101.3512, doi:10.1007/JHEP03(2011)090.

*Measurement of Bose-Einstein Correlations in  $pp$  Collisions at  $\sqrt{s} = 0.9$  and 7 TeV.*

Vardan Khachatryan and others.

*JHEP*, 05:029, 2011.

arXiv:1101.3518, doi:10.1007/JHEP05(2011)029.

*Search for Supersymmetry in  $pp$  Collisions at 7 TeV in Events with Jets and Missing Transverse Energy.*

Vardan Khachatryan and others.

*Phys. Lett.*, B698:196–218, 2011.

arXiv:1101.1628, doi:10.1016/j.physletb.2011.03.021.

*Search for Heavy Stable Charged Particles in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*JHEP*, 03:024, 2011.

arXiv:1101.1645, doi:10.1007/JHEP03(2011)024.

*Measurement of the  $B^+$  Production Cross Section in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 106:112001, 2011.

arXiv:1101.0131, doi:10.1103/PhysRevLett.106.112001.

*Search for a heavy gauge boson  $W'$  in the final state with an electron and large missing transverse energy in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Lett.*, B698:21–39, 2011.

arXiv:1012.5945, doi:10.1016/j.physletb.2011.02.048.

*Upsilon Production Cross-Section in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev.*, D83:112004, 2011.

arXiv:1012.5545, doi:10.1103/PhysRevD.83.112004.

*Search for Pair Production of First-Generation Scalar Leptoquarks in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 106:201802, 2011.

arXiv:1012.4031, doi:10.1103/PhysRevLett.106.201802.

*Search for Pair Production of Second-Generation Scalar Leptoquarks in  $pp$  Collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.  
*Phys. Rev. Lett.*, 106:201803, 2011.  
 arXiv:1012.4033, doi:10.1103/PhysRevLett.106.201803.  
[Search for Microscopic Black Hole Signatures at the Large Hadron Collider.](#)  
 Vardan Khachatryan and others.  
*Phys. Lett.*, B697:434–453, 2011.  
 arXiv:1012.3375, doi:10.1016/j.physletb.2011.02.032.  
[Measurements of Inclusive  \$W\$  and  \$Z\$  Cross Sections in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*JHEP*, 01:080, 2011.  
 arXiv:1012.2466, doi:10.1007/JHEP01(2011)080.  
[Measurement of the Isolated Prompt Photon Production Cross Section in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Phys. Rev. Lett.*, 106:082001, 2011.  
 arXiv:1012.0799, doi:10.1103/PhysRevLett.106.082001.  
[Charged particle multiplicities in  \$pp\$  interactions at  \$\sqrt{s} = 0.9\$ , 2.36, and 7 TeV.](#)  
 Vardan Khachatryan and others.  
*JHEP*, 01:079, 2011.  
 arXiv:1011.5531, doi:10.1007/JHEP01(2011)079.  
[Search for Stopped Gluinos in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Phys. Rev. Lett.*, 106:011801, 2011.  
 arXiv:1011.5861, doi:10.1103/PhysRevLett.106.011801.  
[Prompt and non-prompt  \$J/\psi\$  production in  \$pp\$  collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Eur. Phys. J.*, C71:1575, 2011.  
 arXiv:1011.4193, doi:10.1140/epjc/s10052-011-1575-8.  
[First Measurement of the Cross Section for Top-Quark Pair Production in Proton-Proton Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Phys. Lett.*, B695:424–443, 2011.  
 arXiv:1010.5994, doi:10.1016/j.physletb.2010.11.058.  
[Search for Quark Compositeness with the Dijet Centrality Ratio in  \$pp\$  Collisions at  \$\sqrt{s} = 7\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Phys. Rev. Lett.*, 105:262001, 2010.  
 arXiv:1010.4439, doi:10.1103/PhysRevLett.105.262001.  
[Search for Dijet Resonances in 7 TeV  \$pp\$  Collisions at CMS.](#)  
 Vardan Khachatryan and others.  
*Phys. Rev. Lett.*, 105:211801, 2010.  
 arXiv:1010.0203, doi:10.1103/PhysRevLett.105.211801, 10.1103/PhysRevLett.106.029902.  
[Observation of Long-Range Near-Side Angular Correlations in Proton-Proton Collisions at the LHC.](#)  
 Vardan Khachatryan and others.  
*JHEP*, 09:091, 2010.  
 arXiv:1009.4122, doi:10.1007/JHEP09(2010)091.  
[CMS Tracking Performance Results from early LHC Operation.](#)  
 Vardan Khachatryan and others.  
*Eur. Phys. J.*, C70:1165–1192, 2010.  
 arXiv:1007.1988, doi:10.1140/epjc/s10052-010-1491-3.  
[First Measurement of the Underlying Event Activity at the LHC with  \$\sqrt{s} = 0.9\$  TeV.](#)  
 Vardan Khachatryan and others.  
*Eur. Phys. J.*, C70:555–572, 2010.  
 arXiv:1006.2083, doi:10.1140/epjc/s10052-010-1453-9.  
[Measurement of the charge ratio of atmospheric muons with the CMS detector.](#)  
 Vardan Khachatryan and others.  
*Phys. Lett.*, B692:83–104, 2010.  
 arXiv:1005.5332, doi:10.1016/j.physletb.2010.07.033.  
[First Measurement of Bose-Einstein Correlations in proton-proton Collisions at  \$\sqrt{s} = 0.9\$  and 2.36 TeV at the LHC.](#)

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 105:032001, 2010.

arXiv:1005.3294, doi:10.1103/PhysRevLett.105.032001.

*Transverse-momentum and pseudorapidity distributions of charged hadrons in  $pp$  collisions at  $\sqrt{s} = 7$  TeV.*

Vardan Khachatryan and others.

*Phys. Rev. Lett.*, 105:022002, 2010.

arXiv:1005.3299, doi:10.1103/PhysRevLett.105.022002.

in proceedings:

*Studies of PLT-type single-crystal diamond pixel detectors.*

R. Hall-Wilton and others.

In *Proceedings, 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC 2011)*, 1150–1155. 2011.

doi:10.1109/NSSMIC.2011.6154592.