Search for supersymmetry in events with a photon, a lepton, and missing transverse momentum in proton-proton collisions at root s=13 TeV

By: Sirunyan, AM (Sirunyan, A. M.)[1]; Tumasyan, A (Tumasyan, A.)[1]; Adam, W (Adam, W.)[2]; Ambrogi, F (Ambrogi, F.)[2]; Asilar, E (Asilar, E.)[2]; Bergauer, T (Bergauer, T.)[2]; Brandstetter, J (Brandstetter, J.)[2]; Dragicevic, M (Dragicevic, M.)[2]; Ero, J (Eroe, J.)[2]; Del Valle, AE (Del Valle, A. Escalante)[2] ...More

Group Author(s): CMS Collaboration

View ResearcherID and ORCID

JOURNAL OF HIGH ENERGY PHYSICS
Issue: 1
Article Number: 154
DOI: 10.1007/JHEP01(2019)154
Published: JAN 18 2019
Document Type: Article
View Journal Impact

Abstract

Results of a search for supersymmetry are presented using events with a photon, an electron or muon, and large missing transverse momentum. The analysis is based on a data sample corresponding to an integrated luminosity of 35.9 fb(-1) of proton-proton collisions at 13 TeV, produced by the LHC and collected with the CMS detector in 2016. Theoretical models with gauge-mediated supersymmetry breaking predict events with photons in the final state, as well as electroweak gauge bosons decaying to leptons. Searches for events with a photon, a lepton, and missing transverse momentum are sensitive probes of these models. No excess of events is observed beyond expectations from standard model processes. The results of the search are interpreted in the context of simplified models inspired by gauge-mediated supersymmetry breaking. These models are used to derive upper limits on the production cross sections and set lower bounds on masses of supersymmetric particles. Gaugino masses below 930 GeV are excluded at the 95% confidence level in a simplified model with electroweak production of a neutralino and chargino. For simplified models of gluino and squark pair production, gluino masses up to 1.75 TeV and squark masses up to 1.43 TeV are excluded at the 95% confidence level.

Keywords

Author Keywords: Hadron-Hadron scattering (experiments); Supersymmetry
KeyWords Plus: GLUINO PRODUCTION; PP COLLISIONS; BREAKING; SQUARK

Author Information

Reprint Address: Sirunyan, AM (reprint author)

Yerevan Phys Inst, Yerevan, Armenia.

Addresses:

[1] Yerevan Phys Inst, Yerevan, Armenia
[2] Inst Hochenergiephys, Vienna, Austria
[3] Inst Nucl Problems, Minsk, BELARUS
[4] Univ Antwerp, Antwerp, Belgium
[5] Vrije Univ Brussel, Brussels, Belgium
[6] Univ Libre Bruxelles, Brussels, Belgium
[7] Univ Ghent, Ghent, Belgium
[8] Catholic Univ Louvain, Louvain La Neuve, Belgium
[9] Ctr Brasileiro Pesquisas Fis, Rio De Janeiro, Brazil
[10] Univ Estado Rio de Janeiro, Rio De Janeiro, Brazil
[11] Univ Estadual Paulista, Sao Paulo, Brazil
[12] Univ Fed ABC, Sao Paulo, Brazil

[13] Bulgarian Acad Sci, Inst Nucl Res & Nucl Energy, Sofia, Bulgaria
[14] Univ Sofia, Sofia, Bulgaria
[15] Beihang Univ, Beijing, Peoples R China
[16] Inst High Energy Phys, Beijing, Peoples R China
[17] Peking Univ, State Key Lab Nucl Phys & Technol, Beijing, Peoples R China
[18] Tsinghua Univ, Beijing, Peoples R China
[19] Univ Los Andes, Bogota, Colombia
[20] Univ Split, Fac Elect Engn Mech Engn & Naval Architecture, Split, Croatia
[21] Univ Split, Fac Sci, Split, Croatia
[22] Inst Rudjer Boskov, Zagreb, Croatia
[23] Univ Cyprus, Nicosia, Cyprus
[24] Charles Univ Prague, Prague, Czech Republic
[25] Escuela Politec Nacl, Quito, Ecuador
[26] Univ San Francisco Quito, Quito, Ecuador
[27] Acad Sci Res & Technol Arab Republ Egypt, Egyptian Network High Energy Phys, Cairo, Egypt
[28] NICPB, Tallinn, Estonia
[29] Univ Helsinki, Dept Phys, Helsinki, Finland
[30] Helsinki Inst Phys, Helsinki, Finland
[31] Lappeenranta Univ Technol, Lappeenranta, Finland
[32] Univ Paris Saclay, CEA, IRFU, Gif Sur Yvette, France
[33] Univ Paris Saclay, CNRS, IN2P3, Lab Leprince Ringuet,Ecole Polytech, Palaiseau, France
[34] Univ Strasbourg, CNRS, IPHC, UMR 7178, Strasbourg, France
[35] CNRS, Inst Natl Phys Nucl & Phys Particules, Ctr Calcul, IN2P3, Villeurbanne, France
[36] Univ Claude Bernard Lyon 1, Univ Lyon, CNRS, Inst Phys Nucl Lyon,IN2P3, Villeurbanne, France
[37] Georgian Tech Univ, Tbilisi, Rep of Georgia
[38] Tbilisi State Univ, Tbilisi, Rep of Georgia
[39] Rhein Westfal TH Aachen, Phys Inst 1, Aachen, Germany
[40] Rhein Westfal TH Aachen, Phys Inst A 3, Aachen, Germany
[41] Rhein Westfal TH Aachen, Phys Inst B 3, Aachen, Germany
[42] DESY, Hamburg, Germany
[43] Univ Hamburg, Hamburg, Germany
[44] Karlsruher Inst Technol, Karlsruhe, Germany
[45] NCSR Demokritos, INPP, Aghia Paraskevi, Greece
[46] Univ Athens, Athens, Greece
[47] Natl Tech Univ Athens, Athens, Greece
[48] Univ Ioannina, Ioannina, Greece
[49] Eotvos Lorand Univ, MTA ELTE Lendulet CMS Particle & Nucl Phys Grp, Budapest, Hungary
[50] Wigner Res Ctr Phys, Budapest, Hungary
[51] Inst Nucl Res ATOMKI, Debrecen, Hungary
[52] Univ Debrecen, Inst Phys, Debrecen, Hungary
[53] Indian Inst Sci IISc, Bangalore, Karnataka, India
[54] Natl Inst Sci Educ & Res, HBNI, Bhubaneswar, India
[55] Panjab Univ, Chandigarh, India
[56] Univ Delhi, Delhi, India
[57] Saha Inst Nucl Phys, HBNI, Kolkata, India
[58] Indian Inst Technol Madras, Madras, Tamil Nadu, India
[59] Bhabha Atom Res Ctr, Mumbai, India
[60] Tata Inst Fundamental Res A, Mumbai, India
[61] Tata Inst Fundamental Res B, Mumbai, India

[62] IISER, Pune, Maharashtra, India

[63] Inst Res Fundamental Sci IPM, Tehran, Iran

[64] Univ Coll Dublin, Dublin, Ireland

[65] INFN, Sez Bari, Bari, Italy

[66] Univ Bari, Bari, Italy

[67] Politecn Bari, Bari, Italy

[68] INFN, Sez Bologna, Bologna, Italy

[69] Univ Bologna, Bologna, Italy

[70] INFN, Sez Catania, Catania, Italy

[71] Univ Catania, Catania, Italy

[72] INFN, Sez Firenze, Florence, Italy

[73] Univ Firenze, Florence, Italy

[74] INFN, Lab Nazl Frascati, Frascati, Italy

[75] INFN, Sez Genova, Genoa, Italy

[76] Univ Genoa, Genoa, Italy

[77] INFN, Sez Milano Bicocca, Milan, Italy

[78] Univ Milano Bicocca, Milan, Italy

[79] INFN, Sez Napoli, Naples, Italy

[80] Univ Napoli Federico II, Naples, Italy

[81] Univ Basilicata, Potenza, Italy

[82] Univ G Marconi, Rome, Italy

[83] INFN, Sez Padova, Padua, Italy

[84] Univ Padua, Padua, Italy

[85] Univ Trento, Trento, Italy

[86] INFN, Sez Pavia, Pavia, Italy

[87] Univ Pavia, Pavia, Italy

[88] INFN, Sez Perugia, Perugia, Italy

[89] INFN, Sez Perugia, Perugia, Italy

[90] Univ Perugia, Perugia, Italy

[91] INFN, Sez Pisa, Pisa, Italy

[92] Univ Pisa, Pisa, Italy

[93] Scuola Normale Super Pisa, Pisa, Italy

[94] INFN, Sez Roma, Rome, Italy

[95] Sapienza Univ Roma, Rome, Italy

[96] INFN, Sez Torino, Turin, Italy

[97] Univ Torino, Turin, Italy

[98] Univ Piemonte Orientale, Novara, Italy

[99] INFN, Sez Trieste, Trieste, Italy

[100] Univ Trieste, Trieste, Italy

[101] Kyungpook Natl Univ, Daegu, South Korea

[102] Chonnam Natl Univ, Inst Universe & Elementary Particles, Kwangju, South Korea

[103] Hanyang Univ, Seoul, South Korea

[104] Korea Univ, Seoul, South Korea

[105] Sejong Univ, Seoul, South Korea

[106] Seoul Natl Univ, Seoul, South Korea

[107] Univ Seoul, Seoul, South Korea

[108] Sungkyunkwan Univ, Suwon, South Korea

[109] Vilnius Univ, Vilnius, Lithuania

[110] Univ Malaya, Natl Ctr Particle Phys, Kuala Lumpur, Malaysia

[111] Univ Sonora UNISON, Hermosillo, Sonora, Mexico
[112] IPN, Ctr Invest & Estudios Avanzados, Mexico City, DF, Mexico
[113] Univ Iberoamer, Mexico City, DF, Mexico
[114] Benemerita Univ Autonoma Puebla, Puebla, Mexico
[115] Univ Autonoma San Luis Potosi, San Luis Potosi, Mexico
[116] Univ Auckland, Auckland, New Zealand
[117] Univ Canterbury, Christchurch, New Zealand
[118] Quaid I Azam Univ, Natl Ctr Phys, Islamabad, Pakistan
[119] Natl Ctr Nucl Res, Otwock, Poland
[120] Univ Warsaw, Fac Phys, Inst Expt Phys, Warsaw, Poland
[121] Lab Instrumentacao & Fis Expt Particulas, Lisbon, Portugal
[122] Joint Inst Nucl Res, Dubna, Russia
[123] Petersburg Nucl Phys Inst, St Petersburg, Russia
[124] Inst Nucl Res, Moscow, Russia
[125] Inst Theoret & Expt Phys, Moscow, Russia
[126] Moscow Inst Phys & Technol, Moscow, Russia
[127] Natl Res Nucl Univ, Moscow Engn Phys Inst MEPhI, Moscow, Russia
[128] PN Lebedev Phys Inst, Moscow, Russia
[129] Lomonosov Moscow State Univ, Skobeltsyn Inst Nucl Phys, Moscow, Russia
[130] NSU, Novosibirsk, Russia
[131] Kurchatov Inst, Natl Res Ctr, Inst High Energy Phys, Protvino, Russia
[132] Natl Res Tomsk Polytech Univ, Tomsk, Russia
[133] Univ Belgrade, Fac Phys, Belgrade, Serbia
[134] Vinca Inst Nucl Sci, Belgrade, Serbia
[135] Ctr Invest Energet Medioambientales & Tecnol CIEM, Madrid, Spain
[136] Univ Autonoma Madrid, Madrid, Spain
[137] Univ Oviedo, Oviedo, Spain
[138] Univ Cantabria, CSIC, Inst Fis Cantabria IFCA, Santander, Spain
[139] Univ Ruhuna, Dept Phys, Matara, Sri Lanka
[140] CERN, European Org Nucl Res, Geneva, Switzerland
[141] Paul Scherrer Inst, Villigen, Switzerland
[142] Swiss Fed Inst Technol, Inst Particle Phys & Astrophys IPA, Zurich, Switzerland
[143] Univ Zurich, Zurich, Switzerland
[144] Natl Cent Univ, Chungli, Taiwan
[145] NTU, Taipei, Taiwan
[146] Chulalongkorn Univ, Fac Sci, Dept Phys, Bangkok, Thailand
[147] Cukurova Univ, Sci & Art Fac, Phys Dept, Adana, Turkey
[148] Middle East Tech Univ, Phys Dept, Ankara, Turkey
[149] Bogazici Univ, Istanbul, Turkey
[150] Istanbul Tech Univ, Istanbul, Turkey
[151] Natl Acad Sci Ukraine, Inst Scintillat Mat, Kharkov, Ukraine
[152] Kharkov Inst Phys & Technol, Natl Sci Ctr, Kharkov, Ukraine
[153] Univ Bristol, Bristol, Avon, England
[154] Rutherford Appleton Lab, Didcot, Oxon, England
[155] Imperial Coll, London, England
[156] Brunel Univ, Uxbridge, Middx, England
[157] Baylor Univ, Waco, TX 76798 USA
[158] Catholic Univ Amer, Washington, DC 20064 USA
[159] Univ Alabama, Tuscaloosa, AL USA

[160] Boston Univ, Boston, MA 02215 USA

[161] Brown Univ, Providence, RI 02912 USA

[162] Univ Calif Davis, Davis, CA 95616 USA

[163] Univ Calif Los Angeles, Los Angeles, CA USA

[164] Univ Calif Riverside, Riverside, CA 92521 USA

[165] Univ Calif San Diego, La Jolla, CA 92093 USA

[166] Univ Calif Santa Barbara, Dept Phys, Santa Barbara, CA 93106 USA

[167] CALTECH, Pasadena, CA 91125 USA

[168] Carnegie Mellon Univ, Pittsburgh, PA 15213 USA

[169] Univ Colorado, Boulder, CO 80309 USA

[170] Cornell Univ, Ithaca, NY USA

[171] Fermilab Natl Accelerator Lab, POB 500, Batavia, IL 60510 USA

[172] Univ Florida, Gainesville, FL USA

[173] Florida Int Univ, Miami, FL 33199 USA

[174] Florida State Univ, Tallahassee, FL 32306 USA

[175] Florida Inst Technol, Melbourne, FL 32901 USA

[176] UIC, Chicago, IL USA

[177] Univ Iowa, Iowa City, IA USA

[178] Johns Hopkins Univ, Baltimore, MD USA

[179] Univ Kansas, Lawrence, KS 66045 USA

[180] Kansas State Univ, Manhattan, KS 66506 USA

[181] Lawrence Livermore Natl Lab, Livermore, CA USA

[182] Univ Maryland, College Pk, MD 20742 USA

[183] MIT, 77 Massachusetts Ave, Cambridge, MA 02139 USA

[184] Univ Minnesota, Minneapolis, MN USA

[185] Univ Mississippi, Oxford, MS USA

[186] Univ Nebraska, Lincoln, NE USA

[187] SUNY Buffalo, Buffalo, NY USA

[188] Northeastern Univ, Boston, MA 02115 USA

[189] Northwestern Univ, Evanston, IL USA

[190] Univ Notre Dame, Notre Dame, IN 46556 USA

[191] Ohio State Univ, Columbus, OH 43210 USA

[192] Princeton Univ, Princeton, NJ 08544 USA

[193] Univ Puerto Rico, Mayaguez, PR USA

[194] Purdue Univ, W Lafayette, IN 47907 USA

[195] Purdue Univ Northwest, Hammond, LA USA

[196] Rice Univ, Houston, TX USA

[197] Univ Rochester, Rochester, NY USA

[198] Rutgers State Univ, Piscataway, NJ USA

[199] Univ Tennessee, Knoxville, TN USA

[200] Texas A&M Univ, College Stn, TX USA

[201] Texas Tech Univ, Lubbock, TX 79409 USA

[202] Vanderbilt Univ, 221 Kirkland Hall, Nashville, TN 37235 USA

[203] Univ Virginia, Charlottesville, VA USA

[204] Wayne State Univ, Detroit, MI USA

[205] Univ Wisconsin, Madison, WI USA

[206] Vienna Univ Technol, Vienna, Austria

[207] Univ Estadual Campinas, Campinas, SP, Brazil

[208] Univ Fed Rio Grande do Sul, Porto Alegre, RS, Brazil

[209] Univ Chinese Acad Sci, Beijing, Peoples R China
[210] Cairo Univ, Cairo, Egypt
[211] Zewail City Sci & Technol, Zewail, Egypt
[212] British Univ Egypt, Cairo, Egypt
[213] Ain Shams Univ, Cairo, Egypt
[214] King Abdulaziz Univ, Dept Phys, Jeddah, Saudi Arabia
[215] Univ Haute Alsace, Mulhouse, France
[216] Brandenburg Tech Univ Cottbus, Cottbus, Germany
[217] Indian Inst Technol Bhubaneswar, Bhubaneswar, India
[218] Inst Phys, Bhubaneswar, India
[219] Shoolini Univ, Solan, India
[220] Univ Visva Bharati, Santini Ketan, W Bengal, India
[221] Isfahan Univ Technol, Esfahan, Iran
[222] Islamic Azad Univ, Sci & Res Branch, Plasma Phys Res Ctr, Tehran, Iran
[223] Univ Siena, Siena, Italy
[224] Scuola Normale & Sez INFN, Pisa, Italy
[225] Kyung Hee Univ, Seoul, South Korea
[226] Int Islamic Univ Malaysia, Kuala Lumpur, Malaysia
[227] Agensi Nuklear Malaysia, MOSTI, Kajang, Malaysia
[228] Consejo Nacl Ciencia & Technol, Mexico City, DF, Mexico
[229] Warsaw Univ Technol, Inst Elect Syst, Warsaw, Poland
[230] St Petersburg State Polytech Univ, St Petersburg, Russia
[231] Budker Inst Nucl Phys, Novosibirsk, Russia
[232] Riga Tech Univ, Riga, Latvia
[233] Stefan Meyer Inst Subat Phys SMI, Vienna, Austria
[234] Adiyaman Univ, Adiyaman, Turkey
[235] Istanbul Aydin Univ, Istanbul, Turkey
[236] Mersin Univ, Mersin, Turkey
[237] Piri Reis Univ, Istanbul, Turkey
[238] Gaziosmanpasa Univ, Tokat, Turkey
[239] Ozyegin Univ, Istanbul, Turkey
[240] Izmir Inst Technol, Izmir, Turkey
[241] Marmara Univ, Istanbul, Turkey
[242] Kafkas Univ, Kars, Turkey
[243] Istanbul Univ, Fac Sci, Istanbul, Turkey
[244] Istanbul Bilgi Univ, Istanbul, Turkey
[245] Hacettepe Univ, Ankara, Turkey
[246] Univ Southampton, Sch Phys & Astron, Southampton, Hants, England
[247] Monash Univ, Fac Sci, Clayton, Vic, Australia
[248] Bethel Univ, St Paul, MN USA
[249] Karamanoglu Mehmetbey Univ, Karaman, Turkey
[250] Utah Valley Univ, Orem, UT USA
[251] Beykent Univ, Istanbul, Turkey
[252] Bingol Univ, Bingol, Turkey
[253] Sinop Univ, Sinop, Turkey
[254] Mimar Sinan Univ, Istanbul, Turkey
[255] Texas A&M Univ Qatar, Doha, Qatar

Funding

Funding Agency	Grant Number
BMWFW (Austria)	
FWF (Austria)	
FNRS (Belgium)	
FWO (Belgium)	
CNPq (Brazil)	
CAPES (Brazil)	
FAPERJ (Brazil)	
FAPESP (Brazil)	
MES (Bulgaria)	
CERN	
CAS (China)	
MoST (China)	
NSFC (China)	
COLCIENCIAS (Colombia)	
MSES (Croatia)	
CSF (Croatia)	
RPF (Cyprus)	
SENESCYT (Ecuador)	
MoER (Estonia)	
ERC IUT (Estonia)	
ERDF (Estonia)	
Academy of Finland (Finland)	
MEC (Finland)	
HIP (Finland)	
CEA (France)	
CNRS/IN2P3 (France)	
BMBF (Germany)	
DFG (Germany)	
HGF (Germany)	
GSRT (Greece)	
OTKA (Hungary)	
NIH (Hungary)	
DAE (India)	
DST (India)	
IPM (Iran)	
SFI (Ireland)	
INFN (Italy)	
MSIP (Republic of Korea)	
NRF (Republic of Korea)	
LAS (Lithuania)	
MOE (Malaysia)	
UM (Malaysia)	
BUAP (Mexico)	
CINVESTAV (Mexico)	
CONACYT (Mexico)	
LNS (Mexico)	

SEP (Mexico)	
UASLP-FAI (Mexico)	
MBIE (New Zealand)	
PAEC (Pakistan)	
MSHE (Poland)	
NSC (Poland)	
FCT (Portugal)	
JINR (Dubna)	
MON (Russia)	
RosAtom (Russia)	
RAS (Russia)	
RFBR (Russia)	
RAEP (Russia)	
MESTD (Serbia)	
SEIDI (Spain)	
CPAN (Spain)	
PCTI (Spain)	
FEDER (Spain)	
Swiss Funding Agencies (Switzerland)	
MST (Taipei)	
ThEPCenter (Thailand)	
IPST (Thailand)	
STAR (Thailand)	
NSTDA (Thailand)	
TUBITAK (Turkey)	
TAEK (Turkey)	
NASU (Ukraine)	
SFFR (Ukraine)	
STFC (United Kingdom)	
DOE (U.S.A.)	
NSF (U.S.A.)	
Marie-Curie program (European Union)	
European Research Council (European Union)	
Horizon 2020 Grant (European Union)	675440
Leventis Foundation	
A. P. Sloan Foundation	
Alexander von Humboldt Foundation	
Belgian Federal Science Policy Office	
Fonds pour la Formation a la Recherche dans l'Industrie et dans l'Agriculture (FRIA-Belgium)	
Agentschap voor Innovatie door Wetenschap en Technologie (IWT-Belgium)	
F.R.S.-FNRS (Belgium) under the "Excellence of Science -EOS" -be.h project	30820817
FWO (Belgium) under the "Excellence of Science -EOS" -be.h project	30820817
Ministry of Education, Youth and Sports (MEYS) of the Czech Republic	
Lendulet ("Momentum") of the Hungarian Academy of Sciences (Hungary)	
Janos Bolyai Research Scholarship of the Hungarian Academy of Sciences (Hungary)	
New National Excellence Program UNKP (Hungary)	
NKFIA research grants (Hungary)	123842

	123959 124845 124850 125105
Council of Science and Industrial Research, India	
HOMING PLUS program of the Foundation for Polish Science	
European Union, Regional Development Fund	
Mobility Plus program of the Ministry of Science and Higher Education	
National Science Center (Poland)	Harmonia 2014/14/M/ST2/00428 Opus 2014/13/B/ST2/02543 2014/15/B/ST2/03998 2015/19/B/ST2/02861
Sonata-bis	2012/07/E/ST2/01406
National Priorities Research Program by Qatar National Research Fund	
Programa Estatal de Fomento de la Investigacion Cientifica y Tecnica de Excelencia Maria de Maeztu	MDM-2015-0509
Programa Severo Ochoa del Principado de Asturias	
Thalis program - EU-ESF	
Aristeia program - EU-ESF	
Greek NSRF	
Rachadapisek Sompot Fund for Postdoctoral Fellowship, Chulalongkorn University (Thailand)	
Chulalongkorn Academic into Its 2nd Century Project Advancement Project (Thailand)	
Welch Foundation (U.S.A.)	C-1845
Weston Havens Foundation (U.S.A.)	

View funding text

Publisher

SPRINGER, 233 SPRING ST, NEW YORK, NY 10013 USA

Categories / Classification

Research Areas: Physics

Web of Science Categories: Physics, Particles & Fields

See more data fields

Cited References: 60

Showing 30 of 60 **View All in Cited References page** *(from Web of Science Core Collection)*

1. **Search for photonic signatures of gauge-mediated supersymmetry in 8 TeV pp collisions with the ATLAS detector** **Times Cited: 29**
   By: Aad, G.; Abbott, B.; Abdallah, J.; et al.
   Group Author(s): ATLAS Collaboration
   PHYSICAL REVIEW D Volume: 92 Issue: 7 Article Number: 072001 Published: OCT 6 2015

2. **The Fast Simulation of the CMS Detector at LHC** **Times Cited: 79**
   By: Abdullin, S.; Beaudette, P. Azzi F.; Jannot, P.; et al.
   Group Author(s): CMS Collaboration
   INTERNATIONAL CONFERENCE ON COMPUTING IN HIGH ENERGY AND NUCLEAR PHYSICS (CHEP 2010): EVENT PROCESSING Book Series: Journal of Physics Conference Series Volume: 331 Article Number: 032049 Published: 2011

3. **Phenomenology of pure general gauge mediation** **Times Cited: 36**
   By: Abel, Steven; Dolan, Matthew J.; Jaeckel, Joerg; et al.

JOURNAL OF HIGH ENERGY PHYSICS Issue: 12 Article Number: 001 Published: DEC 2009

4. **GEANT4-a simulation toolkit** — Times Cited: 10,564
By: Agostinelli, S; Allison, J; Amako, K; et al.
NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT Volume: 506 Issue: 3 Pages: 250-303 Published: JUL 1 2003

5. **LOW-ENERGY SUPERSYMMETRY** — Times Cited: 654
By: ALVAREZGAUME, L; CLAUDSON, M; WISE, MB
NUCLEAR PHYSICS B Volume: 207 Issue: 1 Pages: 96-110 Published: 1982

6. **The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations** — Times Cited: 1,999
By: Alwall, J.; Frederix, R.; Frixione, S.; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 7 Article Number: 079 Published: JUL 17 2014

7. **Procedure for the LHC Higgs boson search combination in Summer 2011** — Times Cited: 7
Group Author(s): ATLAS and CMS collaborations and The LHC Higgs Combination Group
CMS-NOTE-2011-005 Published: 2011

8. **Search for photonic signatures of gauge-mediated supersymmetry in 13 TeV pp collisions with the ATLAS detector** — Times Cited: 4
Group Author(s): ATLAS collaboration
Phys. Rev Volume: D 97 Article Number: 092006 Published: 2018

9. **Parton distributions for the LHC run II** — Times Cited: 656
By: Ball, Richard D.; Bertone, Valerio; Carrazza, Stefano; et al.
Group Author(s): NNPDF Collaboration
JOURNAL OF HIGH ENERGY PHYSICS Issue: 4 Article Number: 040 Published: APR 8 2015

10. **Squark and gluino production at hadron colliders** — Times Cited: 616
By: Beenakker, W; Hopker, R; Spira, M; et al.
NUCLEAR PHYSICS B Volume: 492 Issue: 1-2 Pages: 51-103 Published: MAY 12 1997

11. **Production of charginos, neutralinos, and sleptons at hadron colliders** — Times Cited: 232
By: Beenakker, W; Klasen, M; Kramer, M; et al.
PHYSICAL REVIEW LETTERS Volume: 83 Issue: 19 Pages: 3780-3783 Published: NOV 8 1999

12. **Squark and gluino production cross sections in pp collisions at root s=13, 14, 33 and 100 TeV** — Times Cited: 133
By: Borschensky, Christoph; Kraemer, Michael; Kulesza, Anna; et al.
EUROPEAN PHYSICAL JOURNAL C Volume: 74 Issue: 12 Article Number: 3174 Published: DEC 4 2014

13. **Production of Drell-Yan lepton pairs in hadron collisions: Transverse-momentum resummation at next-to-next-to-leading logarithmic accuracy** — Times Cited: 89
By: Bozzi, Giuseppe; Catani, Stefano; Ferrera, Giancarlo; et al.
PHYSICS LETTERS B Volume: 696 Issue: 3 Pages: 207-213 Published: JAN 31 2011

14. **Exploring general gauge mediation** — Times Cited: 99
By: Buican, Matthew; Meade, Patrick; Seiberg, Nathan; et al.
JOURNAL OF HIGH ENERGY PHYSICS Issue: 3 Article Number: 016 Published: MAR 2009

15. **FastJet user manual** — Times Cited: 1,641
By: Cacciari, Matteo; Salam, Gavin P.; Soyez, Gregory
EUROPEAN PHYSICAL JOURNAL C Volume: 72 Issue: 3 Article Number: 1896 Published: MAR 2012

16. **The anti-k(t) jet clustering algorithm** — Times Cited: 2,071
By: Cacciari, Matteo; Salam, Gavin P.; Soyez, Gregory
JOURNAL OF HIGH ENERGY PHYSICS Issue: 4 Article Number: 063 Published: APR 2008

17. **Pileup subtraction using jet areas** — Times Cited: 468
By: Cacciari, Matteo; Salam, Gavin P.

PHYSICS LETTERS B Volume: 659 Issue: 1-2 Pages: 119-126 Published: JAN 17 2008

18. **Implementing general gauge mediation** — Times Cited: 67
By: Carpenter, Linda M.; Dine, Michael; Festuccia, Guido; et al.
PHYSICAL REVIEW D Volume: 79 Issue: 3 Article Number: 035002 Published: FEB 2009

19. **Search for top-squark pair production in the single-lepton final state in pp collisions at root s=8 TeV** — Times Cited: 213
By: Chatrchyan, S.; Khachatryan, V.; Sirunyan, A. M.; et al.
Group Author(s): CMS Collaboration
EUROPEAN PHYSICAL JOURNAL C Volume: 73 Issue: 12 Article Number: UNSP 2677 Published: DEC 21 2013

20. **Measurement of the inclusive W and Z production cross sections in pp collisions at root s = 7 TeV with the CMS experiment** — Times Cited: 105
By: Chatrchyan, S.; Khachatryan, V.; Sirunyan, A. M.; et al.
Group Author(s): CMS Collaboration
JOURNAL OF HIGH ENERGY PHYSICS Issue: 10 Article Number: 132 Published: OCT 2011

21. **Determination of jet energy calibration and transverse momentum resolution in CMS** — Times Cited: 453
By: Chatrchyan, S.; Khachatryan, V.; Sirunyan, A. M.; et al.
Group Author(s): CMS Collaboration
JOURNAL OF INSTRUMENTATION Volume: 6 Article Number: P11002 Published: NOV 2011

22. **The CMS experiment at the CERN LHC** — Times Cited: 1,755
By: Chatrchyan, S.; Hmayakyan, G.; Khachatryan, V.; et al.
Group Author(s): CMS Collaboration
JOURNAL OF INSTRUMENTATION Volume: 3 Article Number: S08004 Published: AUG 2008

23. **Interpretation of searches for supersymmetry with simplified models** — Times Cited: 66
By: Chatrchyan, S.; Khachatryan, V.; Sirunyan, A. M.; et al.
Group Author(s): CMS Collaboration
PHYSICAL REVIEW D Volume: 88 Issue: 5 Article Number: 052017 Published: SEP 23 2013

24. **CMS luminosity measurements for the 2016 data taking period, CMS Physics Analysis Summary** — Times Cited: 62
Group Author(s): CMS Collaboration
CMS-PAS-LUM-17-001 Published: 2017

25. **Search for new physicswith the MT2variable in all-jetsfinal states produced in pp collisions at &RADIC;s=13TeV** — Times Cited: 8
Group Author(s): CMS Collaboration
J. High Energy Phys. Volume: 10 Article Number: 006 Published: 2017
2017

26. **Search for supersymmetry in events with a lepton, a photon, and large missing transverse energy in pp collisions at &RADIC;s= 7 TeV** — Times Cited: 8
Group Author(s): CMS Collaboration
J. High Energy Phys. Volume: 06 Pages: 093 Published: 2011

27. **Performance of the CMS muon de-tector and muon reconstruction with proton-proton collipsions at ffisffiffi <1/4>13 TeV** — Times Cited: 21
Group Author(s): CMS Collaboration
J. Instrum Volume: 13 Article Number: P06015 Published: 2018

28. **Search for supersymmetry in events with at least one photon, missing transverse momentum, and large transverse event activity in proton-proton collisions at s = 13 \documentclass[12pt]{minimal} \usepackage{amsmath} \usepackage{wasysym} \usepackage{amsfonts} \usepackage{amssymb} \usepackage{amsbsy} \usepackage{mathrsfs} \usepackage{upgreek} \setlength{\oddsidemargin}{-69pt} \begin{document}$$ \sqrt{s}=13 $$\end{document} TeV** — Times Cited: 3
Group Author(s): CMS collaboration
JHEP Volume: 12 Pages: 142 Published: 2017

29. **Search for supersymmetry with photons in pp collisions at s = 8 \documentclass[12pt]{minimal} \usepackage{amsmath} \usepackage{wasysym} \usepackage{amsfonts} \usepackage{amssymb} \usepackage{amsbsy} \usepackage{mathrsfs} \usepackage{upgreek} \setlength{\oddsidemargin}{-69pt} \begin{document}$$ \sqrt{s}=8 $$\end{document} TeV** — Times Cited: 13
Group Author(s): CMS collaboration
Phys. Rev. Volume: D 92 Article Number: 072006 Published: 2015

30. Asymptotic formulae for likelihood-based tests of new physics — Times Cited: 901

By: Cowan, Glen; Cranmer, Kyle; Gross, Eilam; et al.

EUROPEAN PHYSICAL JOURNAL C Volume: 71 Issue: 2 Article Number: 1554 Published: FEB 2011

Showing 30 of 60 **View All in Cited References page**