Studies of Beauty Suppression via Nonprompt D-0 Mesons in Pb-Pb Collisions at root s(NN)=5.02 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]; Brondolin, E (Brondolin, E.)[2]; Dragicevic, M (Dragicevic, M.)[2]; Ero, J (Eroe, J.)[2]
...More

Group Author(s): CMS Collaboration

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PHYSICAL REVIEW LETTERS
Volume: 123 Issue: 2
Article Number: 022001
DOI: 10.1103/PhysRevLett.123.022001
Published: JUL 9 2019
Document Type: Article
View Journal Impact

Abstract

The transverse momentum spectra of D-0 mesons from b hadron decays are measured at midrapidity (vertical bar y vertical bar < 1) in pp and Pb-Pb collisions at a nucleon-nucleon center of mass energy of 5.02 TeV with the CMS detector at the LHC. The D-0 mesons from b hadron decays are distinguished from prompt D-0 mesons by their decay topologies. In Pb-Pb collisions, the B -> D-0 yield is found to be suppressed in the measured p(T) range from 2 to 100 GeV/c as compared to pp collisions. The suppression is weaker than that of prompt D-0 mesons and charged hadrons for p(T) around 10 GeV/c. While theoretical calculations incorporating partonic energy loss in the quark-gluon plasma can successfully describe the measured B -> D-0 suppression at higher p(T), the data show an indication of larger suppression than the model predictions in the range of 2 < p(T) < 5 GeV/c.

Keywords

KeyWords Plus: LARGE TRANSVERSE-MOMENTA; QUARK-GLUON PLASMA; PERSPECTIVE; MATTER

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 Boskovic, 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, Ecole Polytech, Lab Leprince Ringuet,IN2P3, Palaiseau, France

[34] Univ Strasbourg, CNRS, UMR 7178, IPHC, F-67000 Strasbourg, France

[35] CNRS, Inst Natl Phys Nucl & Phys Particules, IN2P3, Ctr Calcul, Villeurbanne, France

[36] Univ Claude Bernard Lyon 1, Univ Lyon, CNRS, Inst Phys Nucl Lyon,IN2P3, Villeurbanne, France

[37] Georgian Tech Univ, Tbilisi, Georgia

[38] Tbilisi State Univ, Tbilisi, 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] HBNI, Natl Inst Sci Educ & Res, Bhubaneswar, India

[55] Panjab Univ, Chandigarh, India

[56] Univ Delhi, Delhi, India

[57] HBNI, Saha Inst Nucl Phys, Kolkata, India

[58] Indian Inst Technol Madras, Madras, Tamil Nadu, India

[59] Bhabha Atom Res Ctr, Mumbai, Maharashtra, India

[60] Tata Inst Fundamental Res A, Mumbai, Maharashtra, India

[61] Tata Inst Fundamental Res B, Mumbai, Maharashtra, 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] Univ Perugia, Perugia, Italy

[90] INFN, Sez Pisa, Pisa, Italy

[91] Univ Pisa, Pisa, Italy

[92] Scuola Normale Super Pisa, Pisa, Italy

[93] INFN, Sez Roma, Rome, Italy

[94] Sapienza Univ Roma, Rome, Italy

[95] INFN, Sez Torino, Turin, Italy

[96] Univ Torino, Turin, Italy

[97] Univ Piemonte Orientale, Novara, Italy

[98] INFN, Sez Trieste, Trieste, Italy

[99] Univ Trieste, Trieste, Italy

[100] Kyungpook Natl Univ, Daegu, South Korea

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

[102] Hanyang Univ, Seoul, South Korea

[103] Korea Univ, Seoul, South Korea

[104] Sejong Univ, Seoul, South Korea

[105] Seoul Natl Univ, Seoul, South Korea

[106] Univ Seoul, Seoul, South Korea

[107] Sungkyunkwan Univ, Suwon, South Korea

[108] Vilnius Univ, Vilnius, Lithuania

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

[110] Univ Sonora UNISON, Hermosillo, Sonora, Mexico

[111] IPN, Ctr Invest & Estudios Avanzados, Mexico City, DF, Mexico

[112] Univ Iberoamer, Mexico City, DF, Mexico

[113] Benemerita Univ Autonoma Puebla, Puebla, Mexico

[114] Univ Autonoma San Luis Potosi, San Luis Potosi, Mexico

[115] Univ Auckland, Auckland, New Zealand

[116] Univ Canterbury, Christchurch, New Zealand

[117] Quaid I Azam Univ, Natl Ctr Phys, Islamabad, Pakistan

[118] Natl Ctr Nucl Res, Otwock, Poland

[119] Univ Warsaw, Fac Phys, Inst Expt Phys, Warsaw, Poland

[120] Lab Instrumentacao & Fis Expt Particulas, Lisbon, Portugal

[121] Joint Inst Nucl Res, Dubna, Russia

[122] Petersburg Nucl Phys Inst, St Petersburg, Russia

[123] Inst Nucl Res, Moscow, Russia

[124] Inst Theoret & Expt Phys, Moscow, Russia

[125] Moscow Inst Phys & Technol, Moscow, Russia

[126] Natl Res Nucl Univ, Moscow Engn Phys Inst MEPhI, Moscow, Russia

[127] PN Lebedev Phys Inst, Moscow, Russia

[128] Lomonosov Moscow State Univ, Skobeltsyn Inst Nucl Phys, Moscow, Russia

[129] NSU, Novosibirsk, Russia

[130] Natl Res Ctr, Kurchatov Inst, Inst High Energy Phys, Protvino, Russia

[131] Natl Res Tomsk Polytech Univ, Tomsk, Russia

[132] Univ Belgrade, Fac Phys, Belgrade, Serbia

[133] Vinca Inst Nucl Sci, Belgrade, Serbia

[134] Ctr Invest Energet Medioambientales & Tecnol CIEM, Madrid, Spain

[135] Univ Autonoma Madrid, Madrid, Spain

[136] Univ Oviedo, Oviedo, Spain

[137] Univ Cantabria, CSIC, Inst Fis Cantabria IFCA, Santander, Spain

[138] Univ Ruhuna, Dept Phys, Matara, Sri Lanka

[139] CERN, European Org Nucl Res, Geneva, Switzerland

[140] Paul Scherrer Inst, Villigen, Switzerland

[141] Swiss Fed Inst Technol, Inst Particle Phys & Astrophys IPA, Zurich, Switzerland

[142] Univ Zurich, Zurich, Switzerland

[143] Natl Cent Univ, Chungli, Taiwan

[144] NTU, Taipei, Taiwan

[145] Chulalongkorn Univ, Fac Sci, Dept Phys, Bangkok, Thailand

[146] Cukurova Univ, Phys Dept, Sci & Art Fac, Adana, Turkey

[147] Middle East Tech Univ, Phys Dept, Ankara, Turkey

[148] Bogazici Univ, Istanbul, Turkey

[149] Istanbul Tech Univ, Istanbul, Turkey

[150] Natl Acad Sci Ukraine, Inst Scintillat Mat, Kharkov, Ukraine

[151] Kharkov Inst Phys & Technol, Natl Sci Ctr, Kharkov, Ukraine

[152] Univ Bristol, Bristol, Avon, England

[153] Rutherford Appleton Lab, Didcot, Oxon, England

[154] Imperial Coll, London, England

[155] Brunel Univ, Uxbridge, Middx, England

[156] Baylor Univ, Waco, TX 76798 USA

[157] Catholic Univ Amer, Washington, DC 20064 USA

[158] Univ Alabama, Tuscaloosa, AL USA

[159] Boston Univ, Boston, MA 02215 USA

[160] Brown Univ, Providence, RI 02912 USA

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

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

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

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

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

[166] CALTECH, Pasadena, CA 91125 USA

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

[168] Univ Colorado, Boulder, CO 80309 USA

[169] Cornell Univ, Ithaca, NY USA

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

[171] Univ Florida, Gainesville, FL USA

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

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

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

[175] UIC, Chicago, IL USA

[176] Univ Iowa, Iowa City, IA USA

[177] Johns Hopkins Univ, Baltimore, MD USA

[178] Univ Kansas, Lawrence, KS 66045 USA

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

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

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

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

[183] Univ Minnesota, Minneapolis, MN USA

[184] Univ Mississippi, Oxford, MS USA

[185] Univ Nebraska, Lincoln, NE USA

[186] SUNY Buffalo, Buffalo, NY USA

[187] Northeastern Univ, Boston, MA 02115 USA

[188] Northwestern Univ, Evanston, IL USA

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

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

[191] Princeton Univ, Princeton, NJ 08544 USA

[192] Univ Puerto Rico, Mayaguez, PR USA

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

[194] Purdue Univ Northwest, Hammond, LA USA

[195] Rice Univ, Houston, TX USA

[196] Univ Rochester, Rochester, NY USA

[197] Rockefeller Univ, 1230 York Ave, New York, NY 10021 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] Helwan Univ, Cairo, Egypt

[210] Zewail City Sci & Technol, Zewail, Egypt

[211] Suez Univ, Suez, Egypt

[212] British Univ Egypt, Cairo, Egypt

[213] King Abdulaziz Univ, Dept Phys, Jeddah, Saudi Arabia

[214] Univ Haute Alsace, Mulhouse, France

[215] Brandenburg Tech Univ Cottbus, Cottbus, Germany

[216] Indian Inst Technol Bhubaneswar, Bhubaneswar, India

[217] Inst Phys, Bhubaneswar, India

[218] Shoolini Univ, Solan, India

[219] Univ Visva Bharati, Santini Ketan, W Bengal, India

[220] Isfahan Univ Technol, Esfahan, Iran

[221] Yazd Univ, Yazd, Iran

[222] Islamic Azad Univ, Sci & Res Branch, Plasma Phys Res Ctr, Tehran, Iran

[223] Univ Siena, Siena, Italy

[224] Int Islamic Univ Malaysia, Kuala Lumpur, Malaysia

[225] Agensi Nuklear Malaysia, MOSTI, Kajang, Malaysia

[226] Consejo Nacl Ciencia & Technol, Mexico City, DF, Mexico

[227] Warsaw Univ Technol, Inst Elect Syst, Warsaw, Poland

[228] St Petersburg State Polytech Univ, St Petersburg, Russia

[229] Budker Inst Nucl Phys, Novosibirsk, Russia

[230] Scuola Normale & Sez INFN, Pisa, Italy

[231] Univ Athens, Athens, Greece

[232] Univ Athens, Athens, Greece

[233] Riga Tech Univ, Riga, Latvia

[234] Univ Zurich, Zurich, Switzerland

[235] Stefan Meyer Inst Subat Phys SMI, Vienna, Austria

[236] Gaziosmanpasa Univ, Tokat, Turkey

[237] Adiyaman Univ, Adiyaman, Turkey

[238] Istanbul Aydin Univ, Istanbul, Turkey

[239] Mersin Univ, Mersin, Turkey

[240] Piri Reis Univ, Istanbul, Turkey

[241] Ozyegin Univ, Istanbul, Turkey

[242] Izmir Inst Technol, Izmir, Turkey

[243] Marmara Univ, Istanbul, Turkey

[244] Kafkas Univ, Kars, Turkey

[245] Istanbul Univ, Fac Sci, Istanbul, Turkey

[246] Istanbul Bilgi Univ, Istanbul, Turkey

[247] Hacettepe Univ, Ankara, Turkey

[248] Univ Southampton, Sch Phys & Astron, Southampton, Hants, England

[249] Monash Univ, Fac Sci, Clayton, Vic, Australia

[250] Bethel Univ, St Paul, MN USA

- [251] Karamanoglu Mehmetbey Univ, Karaman, Turkey
- [252] Utah Valley Univ, Orem, UT USA
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- [254] Bingol Univ, Bingol, Turkey
- [255] Sinop Univ, Sinop, Turkey
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Funding

Funding Agency Show details	Grant Number
Austrian Science Fund (FWF)	
Fonds de la Recherche Scientifique - FNRS	
FWO	
National Council for Scientific and Technological Development (CNPq)	
CAPES	
Carlos Chagas Filho Foundation for Research Support of the State of Rio de Janeiro (FAPERJ)	
Foundation for Research Support of the State of Rio Grande do Sul (FAPERGS)	
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View funding text

Publisher

AMER PHYSICAL SOC, ONE PHYSICS ELLIPSE, COLLEGE PK, MD 20740-3844 USA

Journal Information

Impact Factor: Journal Citation Reports

Categories / Classification

Research Areas: Physics

Web of Science Categories: Physics, Multidisciplinary

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