

XXVIIth International Conference on Ultrarelativistic Nucleus–Nucleus
Collisions (Quark Matter 2018)

PHENIX Collaboration

A. Adare¹³, S. Afanasiev³³, C. Aidala^{14,42,47,48}, N.N. Ajitanand^{68,b},
Y. Akiba^{12,a}, R. Akimoto¹², H. Al-Bataineh⁵⁶, J. Alexander⁶⁸,
M. Alfred²⁶, H. Al-Ta'ani⁵⁶, V. Andrieux⁴⁸, A. Angerami¹⁴,
K. Aoki^{35,38,62}, N. Apadula^{31,69}, L. Aphecetche⁷⁰, Y. Aramaki^{12,62},
R. Armendariz⁵⁶, S.H. Aronson⁷, J. Asai⁶³, H. Asano^{38,62},
E.C. Aschenauer⁷, E.T. Atomssa^{39,69}, R. Averbeck⁶⁹, T.C. Awes⁵⁸,
C. Ayuso⁴⁸, B. Azmoun⁷, V. Babintsev²⁷, A. Bagoly¹⁸, M. Bai⁶,
X. Bai¹¹, G. Baksay²¹, L. Baksay²¹, A. Baldisseri¹⁶, N.S. Bandara⁴⁷,
B. Bannier⁶⁹, K.N. Barish⁸, P.D. Barnes^{42,b}, B. Bassalleck⁵⁵,
A.T. Basye¹, S. Bathe^{5,8,63}, S. Batsouli⁵⁸, V. Baublis⁶¹, C. Baumann^{7,49},
S. Baumgart⁶², A. Bazilevsky⁷, M. Beaumier⁸, S. Beckman¹³,
S. Belikov^{7,b}, R. Belmont^{13,48,75}, R. Bennett⁶⁹, A. Berdnikov⁶⁵,
Y. Berdnikov⁶⁵, J.H. Bhom⁷⁹, A.A. Bickley¹³, D. Black⁸, D.S. Blau^{37,54},
M. Boer⁴², J.G. Boissevain⁴², J.S. Bok^{55,56,79}, H. Borel¹⁶, K. Boyle^{63,69},
M.L. Brooks⁴², J. Bryslawskij^{5,8}, H. Buesching⁷, V. Bumazhnov²⁷,
G. Bunce^{7,63}, C. Butler²³, S. Butsyk^{42,55,69}, S. Campbell^{14,31,69},
V. Canoa Roman⁶⁹, A. Caringi⁵⁰, P. Castera⁶⁹, R. Cervantes⁶⁹,
B.S. Chang⁷⁹, J.L. Charvet¹⁶, C.-H. Chen^{63,69}, S. Chernichenko²⁷,
C.Y. Chi¹⁴, J. Chiba³⁵, M. Chiu^{7,28}, I.J. Choi^{28,79}, J.B. Choi^{10,b},
S. Choi⁶⁷, R.K. Choudhury⁴, P. Christiansen⁴⁴, T. Chujo^{74,75}, P. Chung⁶⁸,
A. Churny²⁷, O. Chvala⁸, V. Cianciolo⁵⁸, Z. Citron^{69,77}, C.R. Cleven²³,
B.A. Cole¹⁴, M.P. Comets⁵⁹, Z. Conesa del Valle³⁹, M. Connors^{23,63,69},
P. Constantin⁴², N. Cronin^{50,69}, N. Crossette⁵⁰, M. Csanád¹⁸,
T. Csörgő^{19,78}, T. Dahms⁶⁹, S. Dairaku^{38,62}, I. Danchev⁷⁵, T.W. Danley⁵⁷,
K. Das²², A. Datta^{47,55}, M.S. Daugherty¹, G. David^{7,69},
M.K. Dayananda²³, M.B. Deaton¹, K. DeBlasio⁵⁵, K. Dehmelt^{21,69},

H. Delagrangé^{70,b}, A. Denisov²⁷, D. d'Enterria¹⁴, A. Deshpande^{63,69},
 E.J. Desmond⁷, K.V. Dharmawardane⁵⁶, O. Dietzsch⁶⁶, L. Ding³¹,
 A. Dion^{31,69}, P.B. Diss⁴⁶, D. Dixit⁶⁹, J.H. Do⁷⁹, M. Donadelli⁶⁶,
 L. D'Orazio⁴⁶, O. Drapier³⁹, A. Drees⁶⁹, K.A. Drees⁶, A.K. Dubey⁷⁷,
 M. Dumancic⁷⁷, J.M. Durham^{42,69}, A. Durum²⁷, D. Dutta⁴,
 V. Dzhordzhadze⁸, S. Edwards^{6,22}, Y.V. Efremenko⁵⁸, J. Egdemir⁶⁹,
 T. Elder²³, F. Ellinghaus¹³, W.S. Emam⁸, T. Engelmöser¹⁴,
 A. Enokizono^{41,58,62,64}, H. En'yo^{62,63}, S. Esumi⁷⁴, K.O. Eyser^{7,8},
 B. Fadem⁵⁰, W. Fan⁶⁹, N. Feege⁶⁹, D.E. Fields^{55,63}, M. Finger^{9,33},
 M. Finger Jr.^{9,33}, F. Fleuret³⁹, S.L. Fokin³⁷, Z. Fraenkel^{77,b},
 J.E. Frantz^{57,69}, A. Franz⁷, A.D. Frawley²², K. Fujiwara⁶²,
 Y. Fukao^{35,38,62}, Y. Fukuda⁷⁴, T. Fusayasu⁵², S. Gadrat⁴³, K. Gaiety¹,
 C. Gal⁶⁹, P. Gallus¹⁵, P. Garg^{3,69}, A. Garishvili⁷², I. Garishvili^{41,72},
 H. Ge⁶⁹, F. Giordano²⁸, A. Glenn^{13,41}, H. Gong⁶⁹, X. Gong⁶⁸,
 M. Gonin³⁹, J. Gosset¹⁶, Y. Goto^{62,63}, R. Granier de Cassagnac³⁹,
 N. Grau^{2,14,31}, S.V. Greene⁷⁵, G. Grim⁴², M. Grosse Perdekamp^{28,63},
 Y. Gu⁶⁸, T. Gunji¹², L. Guo⁴², H. Guragain²³, H.-Å. Gustafsson^{44,b},
 T. Hachiya^{25,53,62,63}, A. Hadj Henni⁷⁰, C. Haegemann⁵⁵, J.S. Haggerty⁷,
 K.I. Hahn²⁰, H. Hamagaki¹², J. Hamblen⁷², H.F. Hamilton¹, R. Han⁶⁰,
 S.Y. Han²⁰, J. Hanks^{14,69}, H. Harada²⁵, E.P. Hartouni⁴¹, K. Haruna²⁵,
 S. Hasegawa³², T.O.S. Haseler²³, K. Hashimoto^{62,64}, E. Haslum⁴⁴,
 R. Hayano¹², S. Hayashi¹², X. He²³, M. Heffner⁴¹, T.K. Hemmick⁶⁹,
 T. Hester⁸, H. Hiejima²⁸, J.C. Hill³¹, K. Hill¹³, R. Hobbs⁵⁵, A. Hodges²³,
 M. Hohmann²¹, R.S. Hollis⁸, W. Holzmann^{14,68}, K. Homma²⁵,
 B. Hong³⁶, T. Horaguchi^{25,62,73,74}, Y. Hori¹², D. Hornback⁷²,
 T. Hoshino²⁵, N. Hotvedt³¹, J. Huang^{7,42}, S. Huang⁷⁵, T. Ichihara^{62,63},
 R. Ichimiya⁶², H. Iinuma^{35,38,62}, Y. Ikeda^{62,74}, K. Imai^{32,38,62}, Y. Imazu⁶²,
 J. Imrek¹⁷, M. Inaba⁷⁴, Y. Inoue^{62,64}, A. Iordanova⁸, D. Isenhour¹,
 L. Isenhour¹, M. Ishihara⁶², A. Isinhue⁵⁰, T. Isobe¹², M. Issah^{68,75},
 A. Isupov³³, Y. Ito⁵³, D. Ivanishchev⁶¹, Y. Iwanaga²⁵, B.V. Jacak⁶⁹,
 M. Javani²³, S.J. Jeon⁵¹, M. Jezghani²³, Z. Ji⁶⁹, J. Jia^{7,14,68}, X. Jiang⁴²,
 J. Jin¹⁴, O. Jinnouchi⁶³, B.M. Johnson^{7,23}, T. Jones¹, K.S. Joo⁵¹,
 V. Jorjadze⁶⁹, D. Jouan⁵⁹, D.S. Jumper^{1,28}, F. Kajihara¹²,
 S. Kametani^{12,76}, N. Kamihara⁶², J. Kamin⁶⁹, S. Kanda^{12,35},
 M. Kaneta⁶³, S. Kaneti⁶⁹, B.H. Kang²⁴, J.H. Kang⁷⁹, J.S. Kang²⁴,
 H. Kanou^{62,73}, D. Kapukchyan⁸, J. Kapustinsky⁴², K. Karatsu^{38,62},
 S. Karthas⁶⁹, M. Kasai^{62,64}, D. Kawall^{47,63}, M. Kawashima^{62,64},

A.V. Kazantsev³⁷, T. Kempel³¹, J.A. Key⁵⁵, V. Khachatryan⁶⁹,
 P.K. Khandai³, A. Khanzadeev⁶¹, K.M. Kijima²⁵, J. Kikuchi⁷⁶,
 A. Kim²⁰, B.I. Kim³⁶, C. Kim^{8,36}, D.H. Kim⁵¹, D.J. Kim^{34,79}, E. Kim⁶⁷,
 E.-J. Kim¹⁰, G.W. Kim²⁰, H.J. Kim⁷⁹, K.-B. Kim¹⁰, M. Kim⁶⁷,
 M.H. Kim³⁶, Y.-J. Kim²⁸, Y.K. Kim²⁴, B. Kimelman⁵⁰, D. Kincses¹⁸,
 E. Kinney¹³, Á. Kiss¹⁸, E. Kistenev⁷, R. Kitamura¹², A. Kiyomichi⁶²,
 J. Klatsky²², J. Klay⁴¹, C. Klein-Boesing⁴⁹, D. Kleinjan⁸, P. Kline⁶⁹,
 T. Koblesky¹³, L. Kochenda⁶¹, V. Kochetkov²⁷, M. Kofarago^{18,78},
 Y. Komatsu^{12,35}, B. Komkov⁶¹, M. Konno⁷⁴, J. Koster^{28,63},
 D. Kotchetkov^{8,57}, D. Kotov^{61,65}, A. Kozlov⁷⁷, A. Král¹⁵, A. Kravitz¹⁴,
 F. Krizek³⁴, J. Kubart^{9,30}, S. Kudo⁷⁴, G.J. Kunde⁴², B. Kurgyis¹⁸,
 N. Kurihara¹², K. Kurita^{62,64}, M. Kurosawa^{62,63}, M.J. Kweon³⁶,
 Y. Kwon^{72,79}, G.S. Kyle⁵⁶, R. Lacey⁶⁸, Y.S. Lai¹⁴, J.G. Lajoie³¹,
 E.O. Lallow⁵⁰, A. Lebedev³¹, B. Lee²⁴, D.M. Lee⁴², G.H. Lee¹⁰,
 J. Lee^{20,71}, K.B. Lee^{36,42}, K.S. Lee³⁶, M.K. Lee⁷⁹, S. Lee⁷⁹,
 S.H. Lee^{31,69}, S.R. Lee¹⁰, T. Lee⁶⁷, M.J. Leitch⁴², M.A.L. Leite⁶⁶,
 M. Leitgab²⁸, B. Lenzi⁶⁶, Y.H. Leung⁶⁹, B. Lewis⁶⁹, N.A. Lewis⁴⁸,
 X. Li¹¹, X. Li⁴², P. Lichtenwalner⁵⁰, P. Liebing⁶³, S.H. Lim^{42,79},
 L.A. Linden Levy^{13,41}, T. Liška¹⁵, A. Litvinenko³³, H. Liu⁴², L.D. Liu⁶⁰,
 M.X. Liu⁴², V.-R. Loggins²⁸, S. Lökös¹⁸, K. Lovasz¹⁷, B. Love⁷⁵,
 D. Lynch⁷, C.F. Maguire⁷⁵, T. Majoros¹⁷, Y.I. Makdisi⁶, M. Makek^{77,80},
 M. Malaev⁶¹, A. Malakhov³³, M.D. Malik⁵⁵, A. Manion⁶⁹,
 V.I. Manko³⁷, E. Mannel^{7,14}, Y. Mao^{60,62}, L. Mašek^{9,30}, H. Masuda⁶⁴,
 H. Masui⁷⁴, S. Masumoto^{12,35}, F. Matathias¹⁴, M. McCumber^{13,42,69},
 P.L. McGaughey⁴², D. McGlinchey^{13,22,42}, C. McKinney²⁸, N. Means⁶⁹,
 A. Meles⁵⁶, M. Mendoza⁸, B. Meredith²⁸, Y. Miake⁷⁴, T. Mibe³⁵,
 J. Midori²⁵, A.C. Mignerey⁴⁶, D.E. Mihalik⁶⁹, P. Mikeš^{9,30}, K. Miki^{62,74},
 T.E. Miller⁷⁵, A. Milov^{7,69,77}, S. Mioduszewski⁷, D.K. Mishra⁴,
 M. Mishra³, J.T. Mitchell⁷, M. Mitrovski⁶⁸, G. Mitsuka^{35,63},
 Y. Miyachi^{62,73}, S. Miyasaka^{62,73}, S. Mizuno^{62,74}, A.K. Mohanty⁴,
 S. Mohapatra⁶⁸, P. Montuenga²⁸, H.J. Moon⁵¹, T. Moon⁷⁹, Y. Morino¹²,
 A. Morreale⁸, D.P. Morrison⁷, S.I. Morrow⁷⁵, M. Moskowitz⁵⁰,
 S. Motschwiller⁵⁰, T.V. Moukhanova³⁷, D. Mukhopadhyay⁷⁵,
 T. Murakami^{38,62}, J. Murata^{62,64}, A. Mwai⁶⁸, T. Nagae³⁸, K. Nagai⁷³,
 S. Nagamiya^{35,62}, K. Nagashima²⁵, T. Nagashima⁶⁴, Y. Nagata⁷⁴,
 J.L. Nagle¹³, M. Naglis⁷⁷, M.I. Nagy^{18,78}, I. Nakagawa^{62,63},
 H. Nakagomi^{62,74}, Y. Nakamiya²⁵, K.R. Nakamura^{38,62}, T. Nakamura^{25,62},

K. Nakano ^{62,73}, S. Nam ²⁰, C. Nattrass ⁷², A. Nederlof ⁵⁰, P.K. Netrakanti ⁴,
 J. Newby ⁴¹, M. Nguyen ⁶⁹, M. Nihashi ^{25,62}, T. Niida ⁷⁴, S. Nishimura ¹²,
 B.E. Norman ⁴², R. Nouicer ^{7,63}, T. Novák ^{19,78}, N. Novitzky ^{34,69},
 R. Novotny ¹⁵, A. Nukariya ¹², A.S. Nyanin ³⁷, C. Oakley ²³,
 H. Obayashi ²⁵, E. O'Brien ⁷, S.X. Oda ¹², C.A. Ogilvie ³¹, H. Ohnishi ⁶²,
 H. Oide ¹², M. Oka ⁷⁴, K. Okada ⁶³, O.O. Omiwade ¹, Y. Onuki ⁶²,
 J.D. Orjuela Koop ¹³, J.D. Osborn ⁴⁸, A. Oskarsson ⁴⁴, G.J. Ottino ⁵⁵,
 M. Ouchida ^{25,62}, K. Ozawa ^{12,35,74}, R. Pak ⁷, D. Pal ⁷⁵, A.P.T. Palounek ⁴²,
 V. Pantuev ^{29,69}, V. Papavassiliou ⁵⁶, B.H. Park ²⁴, I.H. Park ^{20,71},
 J. Park ^{10,67}, J.S. Park ⁶⁷, S. Park ^{62,67,69}, S.K. Park ³⁶, W.J. Park ³⁶,
 S.F. Pate ⁵⁶, L. Patel ²³, M. Patel ³¹, H. Pei ³¹, J.-C. Peng ²⁸, W. Peng ⁷⁵,
 H. Pereira ¹⁶, D.V. Perepelitsa ^{7,13,14}, G.D.N. Perera ⁵⁶, V. Peresedov ³³,
 D.Yu. Peressounko ³⁷, C.E. PerezLara ⁶⁹, J. Perry ³¹, R. Petti ^{7,69},
 M. Phipps ^{7,28}, C. Pinkenburg ⁷, R. Pinson ¹, R.P. Pisani ⁷, M. Proissl ⁶⁹,
 A. Pun ⁵⁷, M.L. Purschke ⁷, A.K. Purwar ⁴², H. Qu ^{1,23}, P.V. Radzevich ⁶⁵,
 J. Rak ^{34,55}, A. Rakotozafindrabe ³⁹, B.J. Ramson ⁴⁸, I. Ravinovich ⁷⁷,
 K.F. Read ^{58,72}, S. Rembeczki ²¹, M. Reuter ⁶⁹, K. Reygers ⁴⁹,
 D. Reynolds ⁶⁸, V. Riabov ^{54,61}, Y. Riabov ^{61,65}, E. Richardson ⁴⁶,
 D. Richford ⁵, T. Rinn ³¹, N. Riveli ⁵⁷, D. Roach ⁷⁵, G. Roche ^{43,b},
 S.D. Rolnick ⁸, A. Romana ^{39,b}, M. Rosati ³¹, C.A. Rosen ¹³,
 S.S.E. Rosendahl ⁴⁴, P. Rosnet ⁴³, Z. Rowan ⁵, J.G. Rubin ⁴⁸,
 P. Rukoyatkin ³³, J. Runchey ³¹, P. Ružička ³⁰, V.L. Rykov ⁶², M.S. Ryu ²⁴,
 A.S. Safonov ⁶⁵, B. Sahlmueller ^{49,69}, N. Saito ^{35,38,62,63}, T. Sakaguchi ⁷,
 S. Sakai ⁷⁴, K. Sakashita ^{62,73}, H. Sakata ²⁵, H. Sako ³², V. Samsonov ^{54,61},
 M. Sano ⁷⁴, S. Sano ^{12,76}, M. Sarsour ²³, K. Sato ⁷⁴, S. Sato ^{32,35}, T. Sato ⁷⁴,
 S. Sawada ³⁵, B. Schaefer ⁷⁵, B.K. Schmoll ⁷², K. Sedgwick ⁸, J. Seele ^{13,63},
 R. Seidl ^{28,62,63}, Y. Sekiguchi ¹², V. Semenov ²⁷, A. Sen ^{23,31,72}, R. Seto ⁸,
 P. Sett ⁴, A. Sexton ⁴⁶, D. Sharma ^{69,77}, A. Shaver ³¹, I. Shein ²⁷,
 A. Shevel ^{61,68}, T.-A. Shibata ^{62,73}, K. Shigaki ²⁵, M. Shimomura ^{31,53,74},
 T. Shioya ⁷⁴, K. Shoji ^{38,62}, P. Shukla ⁴, A. Sickles ^{7,28,69}, C.L. Silva ^{31,42,66},
 D. Silvermyr ^{44,58}, C. Silvestre ¹⁶, K.S. Sim ³⁶, B.K. Singh ³, C.P. Singh ³,
 V. Singh ³, M.J. Skoby ⁴⁸, M. Skolnik ⁵⁰, S. Skutnik ³¹, M. Slunečka ^{9,33},
 K.L. Smith ²², M. Snowball ⁴², S. Solano ⁵⁰, A. Soldatov ²⁷, R.A. Soltz ⁴¹,
 W.E. Sondheim ⁴², S.P. Sorensen ⁷², I.V. Sourikova ⁷, F. Staley ¹⁶,
 P.W. Stankus ⁵⁸, P. Steinberg ⁷, E. Stenlund ⁴⁴, M. Stepanov ^{47,56,b},
 A. Ster ⁷⁸, S.P. Stoll ⁷, M.R. Stone ¹³, T. Sugitate ²⁵, C. Suire ⁵⁹,
 A. Sukhanov ⁷, T. Sumita ⁶², J. Sun ⁶⁹, Z. Sun ¹⁷, S. Syed ²³, J. Sziklai ⁷⁸,

T. Tabaru⁶³, S. Takagi⁷⁴, E.M. Takagui⁶⁶, A. Takahara¹², A. Takeda⁵³,
 A. Taketani^{62,63}, R. Tanabe⁷⁴, Y. Tanaka⁵², S. Taneja⁶⁹,
 K. Tanida^{32,38,62,63,67}, M.J. Tannenbaum⁷, S. Tarafdar^{3,75,77},
 A. Taranenko^{54,68}, P. Tarján¹⁷, G. Tarnai¹⁷, E. Tennant⁵⁶, H. Themann⁶⁹,
 D. Thomas¹, T.L. Thomas⁵⁵, R. Tieulent^{23,45}, A. Timilsina³¹,
 T. Todoroki^{62,63,74}, M. Togawa^{38,62,63}, A. Toia⁶⁹, J. Tojo⁶², L. Tomášek³⁰,
 M. Tomášek^{15,30}, H. Torii^{12,25,62}, C.L. Towell¹, R. Towell¹, R.S. Towell¹,
 V.-N. Tram³⁹, I. Tserruya⁷⁷, Y. Tsuchimoto^{12,25}, T. Tsuji¹², Y. Ueda²⁵,
 B. Ujvari¹⁷, C. Vale^{7,31}, H. Valle⁷⁵, H.W. van Hecke⁴², M. Vargyas^{18,78},
 S. Vazquez-Carson¹³, E. Vazquez-Zambrano¹⁴, A. Veicht^{14,28},
 J. Velkovska⁷⁵, R. Vértesi^{17,78}, A.A. Vinogradov³⁷, M. Virius¹⁵,
 B. Voas³¹, A. Vossen²⁸, V. Vrba^{15,30}, N. Vukman⁸⁰, E. Vznuzdaev⁶¹,
 M. Wagner^{38,62}, D. Walker⁶⁹, X.R. Wang^{56,63}, Z. Wang⁵, D. Watanabe²⁵,
 K. Watanabe^{62,64,74}, Y. Watanabe^{62,63}, Y.S. Watanabe^{12,35}, F. Wei^{31,56},
 R. Wei⁶⁸, J. Wessels⁴⁹, S. Whitaker³¹, A.S. White⁴⁸, S.N. White⁷,
 D. Winter¹⁴, S. Wolin²⁸, C.P. Wong²³, C.L. Woody⁷, R.M. Wright¹,
 M. Wysocki^{13,58}, B. Xia⁵⁷, W. Xie⁶³, C. Xu⁵⁶, Q. Xu⁷⁵, L. Xue²³,
 S. Yalcin⁶⁹, Y.L. Yamaguchi^{12,62,63,69,76}, H. Yamamoto⁷⁴, K. Yamaura²⁵,
 R. Yang²⁸, A. Yanovich²⁷, Z. Yasin⁸, P. Yin¹³, J. Ying²³,
 S. Yokkaichi^{62,63}, J.H. Yoo³⁶, I. Yoon⁶⁷, Z. You^{42,60}, G.R. Young⁵⁸,
 I. Younus^{40,55}, H. Yu^{56,60}, I.E. Yushmanov³⁷, W.A. Zajc¹⁴, O. Zaudtke⁴⁹,
 A. Zelenski⁶, C. Zhang⁵⁸, S. Zharko⁶⁵, S. Zhou¹¹, J. Zimanyi^{78,b},
 L. Zolin³³, L. Zou⁸

¹ Abilene Christian University, Abilene, TX 79699, USA

² Department of Physics, Augustana University, Sioux Falls, SD 57197, USA

³ Department of Physics, Ba53s Hindu University, Varanasi 221005, India

⁴ Bhabha Atomic Research Centre, Bombay 400 085, India

⁵ Baruch College, City University of New York, New York, NY, 10010 USA

⁶ Collider-Accelerator Department, Brookhaven National Laboratory, Upton, NY 11973-5000, USA

⁷ Physics Department, Brookhaven National Laboratory, Upton, NY 11973-5000, USA

⁸ University of California-Riverside, Riverside, CA 92521, USA

⁹ Charles University, Ovocný trh 5, Praha 1, 116 36, Prague, Czech Republic

¹⁰ Chonbuk National University, Jeonju, 561-756, Republic of Korea

¹¹ Science and Technology on Nuclear Data Laboratory, China Institute of Atomic Energy, Beijing 102413, People's Republic of China

¹² Center for Nuclear Study, Graduate School of Science, University of Tokyo, 7-3-1 Hongo, Bunkyo, Tokyo 113-0033, Japan

¹³ University of Colorado, Boulder, CO 80309, USA

¹⁴ Columbia University, New York, New York 10027 and Nevis Laboratories, Irvington, NY 10533, USA

¹⁵ Czech Technical University, Zikova 4, 166 36 Prague 6, Czech Republic

¹⁶ Dapnia, CEA Saclay, F-91191, Gif-sur-Yvette, France

¹⁷ Debrecen University, H-4010 Debrecen, Egyetem tér 1, Hungary

¹⁸ ELTE, Eötvös Loránd University, H-1117 Budapest, Pázmány P. s. 1/A, Hungary

¹⁹ Eszterházy Károly University, Károly Róbert Campus, H-3200 Gyöngyös, Mátrai út 36, Hungary

- ²⁰ Ewha Womans University, Seoul 120-750, Republic of Korea
- ²¹ Florida Institute of Technology, Melbourne, FL 32901, USA
- ²² Florida State University, Tallahassee, FL 32306, USA
- ²³ Georgia State University, Atlanta, GA 30303, USA
- ²⁴ Hanyang University, Seoul 133-792, Republic of Korea
- ²⁵ Hiroshima University, Kagamiyama, Higashi-Hiroshima 739-8526, Japan
- ²⁶ Department of Physics and Astronomy, Howard University, Washington, DC 20059, USA
- ²⁷ IHEP Protvino, State Research Center of Russian Federation, Institute for High Energy Physics, Protvino, 142281, Russia
- ²⁸ University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA
- ²⁹ Institute for Nuclear Research of the Russian Academy of Sciences, prospekt 60-letiya Oktyabrya 7a, Moscow 117312, Russia
- ³⁰ Institute of Physics, Academy of Sciences of the Czech Republic, Na Slovance 2, 182 21 Prague 8, Czech Republic
- ³¹ Iowa State University, Ames, IA 50011, USA
- ³² Advanced Science Research Center, Japan Atomic Energy Agency, 2-4 Shirakata Shirane, Tokai-mura, Naka-gun, Ibaraki-ken 319-1195, Japan
- ³³ Joint Institute for Nuclear Research, 141980 Dubna, Moscow Region, Russia
- ³⁴ Helsinki Institute of Physics and University of Jyväskylä, P.O.Box 35, FI-40014 Jyväskylä, Finland
- ³⁵ KEK, High Energy Accelerator Research Organization, Tsukuba, Ibaraki 305-0801, Japan
- ³⁶ Korea University, Seoul, 136-701, Republic of Korea
- ³⁷ National Research Center "Kurchatov Institute", Moscow, 123098 Russia
- ³⁸ Kyoto University, Kyoto 606-8502, Japan
- ³⁹ Laboratoire Leprince-Ringuet, Ecole Polytechnique, CNRS-IN2P3, Route de Saclay, F-91128, Palaiseau, France
- ⁴⁰ Physics Department, Lahore University of Management Sciences, Lahore 54792, Pakistan
- ⁴¹ Lawrence Livermore National Laboratory, Livermore, CA 94550, USA
- ⁴² Los Alamos National Laboratory, Los Alamos, NM 87545, USA
- ⁴³ LPC, Université Blaise Pascal, CNRS-IN2P3, Clermont-Fd, 63177 Aubiere Cedex, France
- ⁴⁴ Department of Physics, Lund University, Box 118, SE-221 00 Lund, Sweden
- ⁴⁵ IPNL, CNRS/IN2P3, Univ Lyon, Université Lyon 1, F-69622, Villeurbanne, France
- ⁴⁶ University of Maryland, College Park, MD 20742, USA
- ⁴⁷ Department of Physics, University of Massachusetts, Amherst, MA 01003-9337, USA
- ⁴⁸ Department of Physics, University of Michigan, Ann Arbor, MI 48109-1040, USA
- ⁴⁹ Institut für Kernphysik, University of Münster, D-48149 Münster, Germany
- ⁵⁰ Muhlenberg College, Allentown, PA 18104-5586, USA
- ⁵¹ Myongji University, Yongin, Kyonggido 449-728, Republic of Korea
- ⁵² Nagasaki Institute of Applied Science, Nagasaki-shi, Nagasaki 851-0193, Japan
- ⁵³ Nara Women's University, Kita-uoya Nishi-machi Nara 630-8506, Japan
- ⁵⁴ National Research Nuclear University, MEPH, Moscow Engineering Physics Institute, Moscow, 115409, Russia
- ⁵⁵ University of New Mexico, Albuquerque, NM 87131, USA
- ⁵⁶ New Mexico State University, Las Cruces, NM 88003, USA
- ⁵⁷ Department of Physics and Astronomy, Ohio University, Athens, OH 45701, USA
- ⁵⁸ Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA
- ⁵⁹ IPN-Orsay, Univ. Paris-Sud, CNRS/IN2P3, Université Paris-Saclay, BP1, F-91406, Orsay, France
- ⁶⁰ Peking University, Beijing 100871, People's Republic of China
- ⁶¹ PNPI, Petersburg Nuclear Physics Institute, Gatchina, Leningrad region, 188300, Russia
- ⁶² RIKEN Nishina Center for Accelerator-Based Science, Wako, Saitama 351-0198, Japan
- ⁶³ RIKEN BNL Research Center, Brookhaven National Laboratory, Upton, NY 11973-5000, USA
- ⁶⁴ Physics Department, Rikkyo University, 3-34-1 Nishi-Ikebukuro, Toshima, Tokyo 171-8501, Japan
- ⁶⁵ Saint Petersburg State Polytechnic University, St. Petersburg, 195251 Russia
- ⁶⁶ Universidade de São Paulo, Instituto de Física, Caixa Postal 66318, São Paulo CEP05315-970, Brazil
- ⁶⁷ Department of Physics and Astronomy, Seoul National University, Seoul 151-742, Republic of Korea
- ⁶⁸ Chemistry Department, Stony Brook University, SUNY, Stony Brook, NY 11794-3400, USA
- ⁶⁹ Department of Physics and Astronomy, Stony Brook University, SUNY, Stony Brook, NY 11794-3800, USA
- ⁷⁰ SUBATECH (Ecole des Mines de Nantes, CNRS-IN2P3, Université de Nantes) BP 20722-44307, Nantes, France
- ⁷¹ Sungkyunkwan University, Suwon, 440-746, Republic of Korea
- ⁷² University of Tennessee, Knoxville, TN 37996, USA

⁷³ Department of Physics, Tokyo Institute of Technology, Oh-okayama, Meguro, Tokyo 152-8551, Japan

⁷⁴ Tomonaga Center for the History of the Universe, University of Tsukuba, Tsukuba, Ibaraki 305, Japan

⁷⁵ Vanderbilt University, Nashville, TN 37235, USA

⁷⁶ Waseda University, Advanced Research Institute for Science and Engineering, 17 Kikui-cho, Shinjuku-ku, Tokyo 162-0044, Japan

⁷⁷ Weizmann Institute, Rehovot 76100, Israel

⁷⁸ Institute for Particle and Nuclear Physics, Wigner Research Centre for Physics, Hungarian Academy of Sciences (Wigner RCP, RMKI) H-1525 Budapest 114, POBox 49, Budapest, Hungary

⁷⁹ Yonsei University, IPAP, Seoul 120-749, Republic of Korea

⁸⁰ Department of Physics, Faculty of Science, University of Zagreb, Bijenička c. 32 HR-10002 Zagreb, Croatia

^a Spokesperson.

^b Deceased.