

LHCb collaboration – official authorship list

valid for date: 17-Jan-2020

collaborators included, who did not leave before 17-Jan-2019
and who joined before 21-Jul-2019

today is 17-Jan-2020

LHCb Collaboration

R. Aaij³¹, C. Abellán Beteta⁴⁹, T. Ackernley⁵⁹, B. Adeva⁴⁵, M. Adinolfi⁵³, H. Afsharnia⁹, C.A. Aidala⁸⁰, S. Aiola²⁵, Z. Ajaltouni⁹, S. Akar⁶⁶, P. Albicocco²², J. Albrecht¹⁴, F. Alessio⁴⁷, M. Alexander⁵⁸, A. Alfonso Albero⁴⁴, G. Alkhazov³⁷, P. Alvarez Cartelle⁶⁰, A.A. Alves Jr⁴⁵, S. Amato², Y. Amhis¹¹, L. An²¹, L. Anderlini²¹, G. Andreassi⁴⁸, M. Andreotti²⁰, F. Archilli¹⁶, A. Artamonov⁴³, M. Artuso⁶⁷, K. Arzymatov⁴¹, E. Aslanides¹⁰, M. Atzeni⁴⁹, B. Audurier²⁶, S. Bachmann¹⁶, J.J. Back⁵⁵, S. Baker⁶⁰, V. Balagura^{11,b}, W. Baldini²⁰, A. Baranov⁴¹, R.J. Barlow⁶¹, S. Barsuk¹¹, W. Barter⁶⁰, M. Bartolini^{23,47,h}, F. Baryshnikov⁷⁷, J.M. Basels¹³, G. Bassi²⁸, V. Batozskaya³⁵, B. Batsukh⁶⁷, A. Battig¹⁴, A. Bay⁴⁸, M. Becker¹⁴, F. Bedeschi²⁸, I. Bediaga¹, A. Beiter⁶⁷, V. Belavin⁴¹, S. Belin²⁶, V. Bellee⁴⁸, K. Belous⁴³, I. Belyaev³⁸, G. Bencivenni²², E. Ben-Haim¹², S. Benson³¹, A. Berezhnuy³⁹, R. Bernet⁴⁹, D. Berninghoff¹⁶, H.C. Bernstein⁶⁷, C. Bertella⁴⁷, E. Bertholet¹², A. Bertolin²⁷, C. Betancourt⁴⁹, F. Betti^{19,e}, M.O. Bettler⁵⁴, Ia. Bezshyiko⁴⁹, S. Bhasin⁵³, J. Bhom³³, M.S. Bieker¹⁴, S. Bifani⁵², P. Billoir¹², A. Bizzeti^{21,u}, M. Bjørn⁶², M.P. Blago⁴⁷, T. Blake⁵⁵, F. Blanc⁴⁸, S. Blusk⁶⁷, D. Bobulska⁵⁸, V. Bocci³⁰, O. Boente Garcia⁴⁵, T. Boettcher⁶³, A. Boldyrev⁷⁸, A. Bondar^{42,x}, N. Bondar^{37,47}, S. Borghi⁶¹, M. Borisyak⁴¹, M. Borsato¹⁶, J.T. Borsuk³³, T.J.V. Bowcock⁵⁹, C. Bozzi²⁰, M.J. Bradley⁶⁰, S. Braun⁶⁵, A. Brea Rodriguez⁴⁵, M. Brodski⁴⁷, J. Brodzicka³³, A. Brossa Gonzalo⁵⁵, D. Brundu²⁶, E. Buchanan⁵³, A. Buonauro⁴⁹, C. Burr⁴⁷, A. Bursche²⁶, A. Butkevich⁴⁰, J.S. Butter³¹, J. Buytaert⁴⁷, W. Byczynski⁴⁷, S. Cadeddu²⁶, H. Cai⁷², R. Calabrese^{20,g}, L. Calero Diaz²², S. Cali²², R. Calladine⁵², M. Calvi^{24,i}, M. Calvo Gomez^{44,m}, P. Camargo Magalhaes⁵³, A. Camboni^{44,m}, P. Campana²², D.H. Campora Perez³¹, A.F. Campoverde Quezada⁵, L. Capriotti^{19,e}, A. Carbone^{19,e}, G. Carboni²⁹, R. Cardinale^{23,h}, A. Cardini²⁶, I. Carli⁶, P. Carniti^{24,i}, K. Carvalho Akiba³¹, A. Casais Vidal⁴⁵, G. Casse⁵⁹, M. Cattaneo⁴⁷, G. Cavallero⁴⁷, S. Celani⁴⁸, R. Cenci^{28,p}, J. Cerasoli¹⁰, M.G. Chapman⁵³, M. Charles¹², Ph. Charpentier⁴⁷, G. Chatzikonstantinidis⁵², M. Chefdeville⁸, V. Chekalina⁴¹, C. Chen³, S. Chen²⁶, A. Chernov³³, S.-G. Chitic⁴⁷, V. Chobanova⁴⁵, S. Cholak⁴⁸, M. Chrzaszcz³³, A. Chubykin³⁷, V. Chulikov³⁷, P. Ciambrone²², M.F. Cicala⁵⁵, X. Cid Vidal⁴⁵, G. Ciezarek⁴⁷, F. Cindolo¹⁹, P.E.L. Clarke⁵⁷, M. Clemencic⁴⁷, H.V. Cliff⁵⁴, J. Closier⁴⁷, J.L. Cobbledick⁶¹, V. Coco⁴⁷, J.A.B. Coelho¹¹, J. Cogan¹⁰, E. Cogneras⁹, L. Cojocariu³⁶, P. Collins⁴⁷, T. Colombo⁴⁷, A. Contu²⁶, N. Cooke⁵², G. Coombs⁵⁸, S. Coquereau⁴⁴, G. Corti⁴⁷, C.M. Costa Sobral⁵⁵, B. Couturier⁴⁷, D.C. Craik⁶³, J. Crkowska⁶⁶, A. Crocombe⁵⁵, M. Cruz Torres^{1,aa}, R. Currie⁵⁷, C.L. Da Silva⁶⁶, E. Dall'Occo¹⁴, J. Dalseno^{45,53}, C. D'Ambrosio⁴⁷, A. Danilina³⁸, P. d'Argent⁴⁷, A. Davis⁶¹, O. De Aguiar Francisco⁴⁷, K. De Bruyn⁴⁷, S. De Capua⁶¹, M. De Cian⁴⁸, J.M. De Miranda¹, L. De Paula², M. De Serio^{18,d}, P. De Simone²², J.A. de Vries³¹, C.T. Dean⁶⁶, W. Dean⁸⁰, D. Decamp⁸, L. Del Buono¹²,

B. Delaney⁵⁴, H.-P. Dembinski¹⁴, A. Dendek³⁴, V. Denysenko⁴⁹, D. Derkach⁷⁸, O. Deschamps⁹,
 F. Desse¹¹, F. Dettori²⁶, B. Dey⁷, A. Di Canto⁴⁷, P. Di Nezza²², S. Didenko⁷⁷, H. Dijkstra⁴⁷,
 V. Dobishuk⁵¹, F. Dordei²⁶, M. Dorigo^{28,y}, A.C. dos Reis¹, L. Douglas⁵⁸, A. Dovbnya⁵⁰,
 K. Dreimanis⁵⁹, M.W. Dudek³³, L. Dufour⁴⁷, P. Durante⁴⁷, J.M. Durham⁶⁶, D. Dutta⁶¹,
 M. Dziewiecki¹⁶, A. Dziurda³³, A. Dzyuba³⁷, S. Easo⁵⁶, U. Egede⁶⁹, V. Egorychev³⁸,
 S. Eidelman^{42,x}, S. Eisenhardt⁵⁷, S. Ek-In⁴⁸, L. Eklund⁵⁸, S. Ely⁶⁷, A. Ene³⁶, E. Epple⁶⁶,
 S. Escher¹³, J. Eschle⁴⁹, S. Esen³¹, T. Evans⁴⁷, A. Falabella¹⁹, J. Fan³, Y. Fan⁵, N. Farley⁵²,
 S. Farry⁵⁹, D. Fazzini¹¹, P. Fedin³⁸, M. Féo⁴⁷, P. Fernandez Declara⁴⁷, A. Fernandez Prieto⁴⁵,
 F. Ferrari^{19,e}, L. Ferreira Lopes⁴⁸, F. Ferreira Rodrigues², S. Ferreres Sole³¹, M. Ferrillo⁴⁹,
 M. Ferro-Luzzi⁴⁷, S. Filippov⁴⁰, R.A. Fini¹⁸, M. Fiorini^{20,g}, M. Firlej³⁴, K.M. Fischer⁶²,
 C. Fitzpatrick⁴⁷, T. Fiutowski³⁴, F. Fleuret^{11,b}, M. Fontana⁴⁷, F. Fontanelli^{23,h}, R. Forty⁴⁷,
 V. Franco Lima⁵⁹, M. Franco Sevilla⁶⁵, M. Frank⁴⁷, C. Frei⁴⁷, D.A. Friday⁵⁸, J. Fu^{25,q},
 M. Fuehring¹⁴, W. Funk⁴⁷, E. Gabriel⁵⁷, T. Gaintseva⁴¹, A. Gallas Torreira⁴⁵, D. Galli^{19,e},
 S. Gallorini²⁷, S. Gambetta⁵⁷, Y. Gan³, M. Gandelman², P. Gandini²⁵, Y. Gao⁴,
 L.M. Garcia Martin⁴⁶, J. García Pardiñas⁴⁹, B. Garcia Plana⁴⁵, F.A. Garcia Rosales¹¹,
 L. Garrido⁴⁴, D. Gascon⁴⁴, C. Gaspar⁴⁷, D. Gerick¹⁶, E. Gersabeck⁶¹, M. Gersabeck⁶¹,
 T. Gershon⁵⁵, D. Gerstel¹⁰, Ph. Ghez⁸, V. Gibson⁵⁴, A. Gioventù⁴⁵, P. Gironella Gironell⁴⁴,
 L. Giubega³⁶, C. Giugliano²⁰, K. Gizdov⁵⁷, V.V. Gligorov¹², C. Göbel⁷⁰, D. Golubkov³⁸,
 A. Golutvin^{60,77}, A. Gomes^{1,a}, P. Gorbounov³⁸, I.V. Gorelov³⁹, C. Gotti^{24,i}, E. Govorkova³¹,
 J.P. Grabowski¹⁶, R. Graciani Diaz⁴⁴, T. Grammatico¹², L.A. Granado Cardoso⁴⁷, E. Graugés⁴⁴,
 E. Graverini⁴⁸, G. Graziani²¹, A. Grecu³⁶, R. Greim³¹, P. Griffith²⁰, L. Grillo⁶¹, L. Gruber⁴⁷,
 B.R. Gruberg Cazon⁶², C. Gu³, E. Gushchin⁴⁰, A. Guth¹³, Yu. Guz^{43,47}, T. Gys⁴⁷, P.
 A. Gnther¹⁶, T. Hadavizadeh⁶², G. Haefeli⁴⁸, C. Haen⁴⁷, S.C. Haines⁵⁴, P.M. Hamilton⁶⁵,
 Q. Han⁷, X. Han¹⁶, T.H. Hancock⁶², S. Hansmann-Menzemer¹⁶, N. Harnew⁶², T. Harrison⁵⁹,
 R. Hart³¹, C. Hasse¹⁴, M. Hatch⁴⁷, J. He⁵, M. Hecker⁶⁰, K. Heijhoff³¹, K. Heinicke¹⁴,
 A.M. Hennequin⁴⁷, K. Hennessy⁵⁹, L. Henry⁴⁶, J. Heuel¹³, A. Hicheur⁶⁸, D. Hill⁶², M. Hilton⁶¹,
 P.H. Hopchev⁴⁸, J. Hu¹⁶, J. Hu⁷¹, W. Hu⁷, W. Huang⁵, W. Hulsbergen³¹, T. Humair⁶⁰,
 R.J. Hunter⁵⁵, M. Hushchyn⁷⁸, D. Hutchcroft⁵⁹, D. Hynds³¹, P. Ibis¹⁴, M. Idzik³⁴, P. Ilten⁵²,
 A. Inglessi³⁷, K. Ivshin³⁷, R. Jacobsson⁴⁷, S. Jakobsen⁴⁷, E. Jans³¹, B.K. Jashal⁴⁶, A. Jawahery⁶⁵,
 V. Jevtic¹⁴, F. Jiang³, M. John⁶², D. Johnson⁴⁷, C.R. Jones⁵⁴, B. Jost⁴⁷, N. Jurik⁶²,
 S. Kandybei⁵⁰, M. Karacson⁴⁷, J.M. Kariuki⁵³, N. Kazeev⁷⁸, M. Kecke¹⁶, F. Keizer^{54,47},
 M. Kelsey⁶⁷, M. Kenzie⁵⁵, T. Ketel³², B. Khanji⁴⁷, A. Kharisova⁷⁹, K.E. Kim⁶⁷, T. Kirn¹³,
 V.S. Kirsabom⁴⁸, S. Klaver²², K. Klimaszewski³⁵, S. Koliiev⁵¹, A. Kondybayeva⁷⁷,
 A. Konoplyannikov³⁸, P. Kopciwicz³⁴, R. Kopecna¹⁶, P. Koppenburg³¹, I. Kostiuik^{31,51}, O. Kot⁵¹,
 S. Kotriakhova³⁷, L. Kravchuk⁴⁰, R.D. Krawczyk⁴⁷, M. Kreps⁵⁵, F. Kress⁶⁰, S. Kretzschmar¹³,
 P. Krokovny^{42,x}, W. Krupa³⁴, W. Krzemien³⁵, W. Kucewicz^{33,l}, M. Kucharczyk³³,
 V. Kudryavtsev^{42,x}, H.S. Kuindersma³¹, G.J. Kunde⁶⁶, T. Kvaratskheliya³⁸, D. Lacarrere⁴⁷,
 G. Lafferty⁶¹, A. Lai²⁶, D. Lancierini⁴⁹, J.J. Lane⁶¹, G. Lanfranchi²², C. Langenbruch¹³,
 O. Lantwin⁴⁹, T. Latham⁵⁵, F. Lazzari^{28,v}, R. Le Gac¹⁰, S.H. Lee⁸⁰, R. Lefèvre⁹, A. Leflat^{39,47},
 O. Leroy¹⁰, T. Lesiak³³, B. Leverington¹⁶, H. Li⁷¹, L. Li⁶², X. Li⁶⁶, Y. Li⁶, Z. Li⁶⁷, X. Liang⁶⁷,
 T. Lin⁶⁰, R. Lindner⁴⁷, V. Lisovskyi¹⁴, G. Liu⁷¹, X. Liu³, D. Loh⁵⁵, A. Loi²⁶, J. Lomba Castro⁴⁵,
 I. Longstaff⁵⁸, J.H. Lopes², G. Loustau⁴⁹, G.H. Lovell⁵⁴, Y. Lu⁶, D. Lucchesi^{27,o},
 M. Lucio Martinez³¹, Y. Luo³, A. Lupato²⁷, E. Luppi^{20,g}, O. Lupton⁵⁵, A. Lusiani^{28,t}, X. Lyu⁵,
 S. Maccolini^{19,e}, F. Machefer¹¹, F. Maciuc³⁶, V. Macko⁴⁸, P. Mackowiak¹⁴,
 S. Maddrell-Mander⁵³, L.R. Madhan Mohan⁵³, O. Maev³⁷, A. Maevskiy⁷⁸, D. Maisuzenko³⁷,
 M.W. Majewski³⁴, S. Malde⁶², B. Malecki⁴⁷, A. Malinin⁷⁶, T. Maltsev^{42,x}, H. Malygina¹⁶,

G. Manca^{26,f}, G. Mancinelli¹⁰, R. Manera Escalero⁴⁴, D. Manuzzi^{19,e}, D. Marangotto²⁵,
 J. Maratas^{9,w}, J.F. Marchand⁸, U. Marconi¹⁹, S. Mariani^{21,21,47}, C. Marin Benito¹¹,
 M. Marinangeli⁴⁸, P. Marino⁴⁸, J. Marks¹⁶, P.J. Marshall⁵⁹, G. Martellotti³⁰, L. Martinazzoli⁴⁷,
 M. Martinelli^{24,i}, D. Martinez Santos⁴⁵, F. Martinez Vidal⁴⁶, A. Massafferri¹, M. Materok¹³,
 R. Matev⁴⁷, A. Mathad⁴⁹, Z. Mathe⁴⁷, V. Matiunin³⁸, C. Matteuzzi²⁴, K.R. Mattioli⁸⁰,
 A. Mauri⁴⁹, E. Maurice^{11,b}, M. McCann⁶⁰, L. McConnell¹⁷, A. McNab⁶¹, R. McNulty¹⁷,
 J.V. Mead⁵⁹, B. Meadows⁶⁴, C. Meaux¹⁰, G. Meier¹⁴, N. Meinert⁷⁴, D. Melnychuk³⁵,
 S. Meloni^{24,i}, M. Merk³¹, A. Merli²⁵, M. Mikhasenko⁴⁷, D.A. Milanese⁷³, E. Millard⁵⁵,
 M.-N. Minard⁸, O. Mineev³⁸, L. Minzoni^{20,g}, S.E. Mitchell⁵⁷, B. Mitreska⁶¹, D.S. Mitzel⁴⁷,
 A. Mödden¹⁴, A. Mogini¹², R.D. Moise⁶⁰, T. Mombächer¹⁴, I.A. Monroy⁷³, S. Monteil⁹,
 M. Morandin²⁷, G. Morello²², M.J. Morello^{28,t}, J. Moron³⁴, A.B. Morris¹⁰, A.G. Morris⁵⁵,
 R. Mountain⁶⁷, H. Mu³, F. Muheim⁵⁷, M. Mukherjee⁷, M. Mulder⁴⁷, D. Müller⁴⁷, K. Müller⁴⁹,
 C.H. Murphy⁶², D. Murray⁶¹, P. Muzzetto²⁶, P. Naik⁵³, T. Nakada⁴⁸, R. Nandakumar⁵⁶,
 T. Nanut⁴⁸, I. Nasteva², M. Needham⁵⁷, N. Neri^{25,q}, S. Neubert¹⁶, N. Neufeld⁴⁷, R. Newcombe⁶⁰,
 T.D. Nguyen⁴⁸, C. Nguyen-Mau^{48,n}, E.M. Niel¹¹, S. Nieswand¹³, N. Nikitin³⁹, N.S. Nolte⁴⁷,
 C. Nunez⁸⁰, A. Oblakowska-Mucha³⁴, V. Obraztsov⁴³, S. Ogilvy⁵⁸, D.P. O’Hanlon⁵³,
 R. Oldeman^{26,f}, C.J.G. Onderwater⁷⁵, J. D. Osborn⁸⁰, A. Ossowska³³, J.M. Otalora Goicochea²,
 T. Ovsiannikova³⁸, P. Owen⁴⁹, A. Oyanguren⁴⁶, P.R. Pais⁴⁸, T. Pajero^{28,47,28,t}, A. Palano¹⁸,
 M. Palutan²², G. Panshin⁷⁹, A. Papanestis⁵⁶, M. Pappagallo⁵⁷, L.L. Pappalardo^{20,g},
 C. Pappenheimer⁶⁴, W. Parker⁶⁵, C. Parkes⁶¹, G. Passaleva^{21,47}, A. Pastore¹⁸, M. Patel⁶⁰,
 C. Patrignani^{19,e}, A. Pearce⁴⁷, A. Pellegrino³¹, M. Pepe Altarelli⁴⁷, S. Perazzini¹⁹, D. Pereima³⁸,
 P. Perret⁹, L. Pescatore⁴⁸, K. Petridis⁵³, A. Petrolini^{23,h}, A. Petrov⁷⁶, S. Petrucci⁵⁷,
 M. Petruzzo^{25,q}, B. Pietrzyk⁸, G. Pietrzyk⁴⁸, M. Pili⁶², D. Pinci³⁰, J. Pinzino⁴⁷, F. Pisani¹⁹,
 A. Piucci¹⁶, V. Placinta³⁶, S. Playfer⁵⁷, J. Plews⁵², M. Plo Casasus⁴⁵, F. Polci¹², M. Poli Lener²²,
 M. Poliakov⁶⁷, A. Poluektov¹⁰, N. Polukhina^{77,c}, I. Polyakov⁶⁷, E. Polycarpo², G.J. Pomery⁵³,
 S. Ponce⁴⁷, A. Popov⁴³, D. Popov⁵², S. Poslavskii⁴³, K. Prasanth³³, L. Promberger⁴⁷,
 C. Prouve⁴⁵, V. Pugatch⁵¹, A. Puig Navarro⁴⁹, H. Pullen⁶², G. Punzi^{28,p}, W. Qian⁵, J. Qin⁵,
 R. Quagliani¹², B. Quintana⁸, N.V. Raab¹⁷, R.I. Rabadan Trejo¹⁰, B. Rachwal³⁴,
 J.H. Rademacker⁵³, M. Rama²⁸, M. Ramos Pernas⁴⁵, M.S. Rangel², F. Ratnikov^{41,78}, G. Raven³²,
 M. Reboud⁸, F. Redi⁴⁸, F. Reiss¹², C. Remon Alepuz⁴⁶, Z. Ren³, V. Renaudin⁶², S. Ricciardi⁵⁶,
 D.S. Richards⁵⁶, S. Richards⁵³, K. Rinnert⁵⁹, P. Robbe¹¹, A. Robert¹², A.B. Rodrigues⁴⁸,
 E. Rodrigues⁵⁹, J.A. Rodriguez Lopez⁷³, M. Roehrken⁴⁷, A. Rollings⁶², V. Romanovskiy⁴³,
 M. Romero Lamas⁴⁵, A. Romero Vidal⁴⁵, J.D. Roth⁸⁰, M. Rotondo²², M.S. Rudolph⁶⁷, T. Ruf⁴⁷,
 J. Ruiz Vidal⁴⁶, A. Ryzhikov⁷⁸, J. Ryzka³⁴, J.J. Saborido Silva⁴⁵, N. Sagidova³⁷, N. Sahoo⁵⁵,
 B. Saitta^{26,f}, C. Sanchez Gras³¹, C. Sanchez Mayordomo⁴⁶, R. Santacesaria³⁰,
 C. Santamarina Rios⁴⁵, M. Santimaria²², E. Santovetti^{29,j}, G. Sarpis⁶¹, M. Sarpis¹⁶, A. Sarti³⁰,
 C. Satriano^{30,s}, A. Satta²⁹, M. Saur⁵, D. Savrina^{38,39}, L.G. Scantlebury Smead⁶², S. Schael¹³,
 M. Schellenberg¹⁴, M. Schiller⁵⁸, H. Schindler⁴⁷, M. Schmelling¹⁵, T. Schmelzer¹⁴, B. Schmidt⁴⁷,
 O. Schneider⁴⁸, A. Schopper⁴⁷, H.F. Schreiner⁶⁴, M. Schubiger³¹, S. Schulte⁴⁸, M.H. Schune¹¹,
 R. Schwemmer⁴⁷, B. Sciascia²², A. Sciubba^{30,k}, S. Sellam⁶⁸, A. Semennikov³⁸, A. Sergi^{52,47},
 N. Serra⁴⁹, J. Serrano¹⁰, L. Sestini²⁷, A. Seuthe¹⁴, P. Seyfert⁴⁷, D.M. Shangase⁸⁰, M. Shapkin⁴³,
 L. Shchutka⁴⁸, T. Shears⁵⁹, L. Shekhtman^{42,x}, V. Shevchenko⁷⁶, E. Shmanin⁷⁷, J.D. Shupperd⁶⁷,
 B.G. Siddi²⁰, R. Silva Coutinho⁴⁹, L. Silva de Oliveira², G. Simi^{27,o}, S. Simone^{18,d}, I. Skiba²⁰,
 N. Skidmore¹⁶, T. Skwarnicki⁶⁷, M.W. Slater⁵², J.G. Smeaton⁵⁴, A. Smetkina³⁸, E. Smith¹³,
 I.T. Smith⁵⁷, M. Smith⁶⁰, A. Snoch³¹, M. Soares¹⁹, L. Soares Lavra⁹, M.D. Sokoloff⁶⁴,
 F.J.P. Soler⁵⁸, B. Souza De Paula², B. Spaan¹⁴, E. Spadaro Norella^{25,q}, P. Spradlin⁵⁸, F. Stagni⁴⁷,

M. Stahl⁶⁴, S. Stahl⁴⁷, P. Stefko⁴⁸, O. Steinkamp⁴⁹, S. Stemmler¹⁶, O. Stenyakin⁴³,
M. Stepanova³⁷, H. Stevens¹⁴, S. Stone⁶⁷, S. Stracka²⁸, M.E. Stramaglia⁴⁸, M. Straticiu³⁶,
S. Stokov⁷⁹, J. Sun²⁶, L. Sun⁷², Y. Sun⁶⁵, P. Svihra⁶¹, K. Swientek³⁴, A. Szabelski³⁵,
T. Szumlak³⁴, M. Szymanski⁴⁷, S. Taneja⁶¹, Z. Tang³, T. Tekampe¹⁴, F. Teubert⁴⁷, E. Thomas⁴⁷,
K.A. Thomson⁵⁹, M.J. Tilley⁶⁰, V. Tisserand⁹, S. T'Jampens⁸, M. Tobin⁶, S. Tol⁴⁷,
L. Tomassetti^{20,g}, D. Torres Machado¹, D.Y. Tou¹², E. Tournefier⁸, M. Traill⁵⁸, M.T. Tran⁴⁸,
E. Trifonova⁷⁷, C. Trippel⁴⁸, A. Tsaregorodtsev¹⁰, G. Tuci^{28,p}, A. Tully⁴⁸, N. Tuning³¹,
A. Ukleja³⁵, A. Usachov³¹, A. Ustyuzhanin^{41,78}, U. Uwer¹⁶, A. Vagner⁷⁹, V. Vagnoni¹⁹,
A. Valassi⁴⁷, G. Valenti¹⁹, M. van Beuzekom³¹, H. Van Hecke⁶⁶, E. van Herwijnen⁴⁷,
C.B. Van Hulse¹⁷, M. van Veghel⁷⁵, R. Vazquez Gomez⁴⁴, P. Vazquez Regueiro⁴⁵,
C. Vázquez Sierra³¹, S. Vecchi²⁰, J.J. Velthuis⁵³, M. Veltri^{21,r}, A. Venkateswaran⁶⁷,
M. Veronesi³¹, M. Vesterinen⁵⁵, J.V. Viana Barbosa⁴⁷, D. Vieira⁶⁴, M. Vieites Diaz⁴⁸,
H. Viemann⁷⁴, X. Vilasis-Cardona^{44,m}, G. Vitali²⁸, A. Vitkovskiy³¹, V. Volkov³⁹, A. Vollhardt⁴⁹,
D. Vom Bruch¹², A. Vorobyev³⁷, V. Vorobyev^{42,x}, N. Voropaev³⁷, R. Waldi⁷⁴, J. Walsh²⁸,
J. Wang³, J. Wang⁷², J. Wang⁶, M. Wang³, Y. Wang⁷, Z. Wang⁴⁹, D.R. Ward⁵⁴, H.M. Wark⁵⁹,
N.K. Watson⁵², D. Websdale⁶⁰, A. Weiden⁴⁹, C. Weisser⁶³, B.D.C. Westhenry⁵³, D.J. White⁶¹,
M. Whitehead¹³, D. Wiedner¹⁴, G. Wilkinson⁶², M. Wilkinson⁶⁷, I. Williams⁵⁴, M. Williams⁶³,
M.R.J. Williams⁶¹, T. Williams⁵², F.F. Wilson⁵⁶, W. Wislicki³⁵, M. Witek³³, L. Witola¹⁶,
G. Wormser¹¹, S.A. Wotton⁵⁴, H. Wu⁶⁷, K. Wyllie⁴⁷, Z. Xiang⁵, D. Xiao⁷, Y. Xie⁷, H. Xing⁷¹,
A. Xu⁴, J. Xu⁵, L. Xu³, M. Xu⁷, Q. Xu⁵, Z. Xu⁴, Z. Yang³, Z. Yang⁶⁵, Y. Yao⁶⁷, L.E. Yeomans⁵⁹,
H. Yin⁷, J. Yu⁷, X. Yuan⁶⁷, O. Yushchenko⁴³, K.A. Zarebski⁵², M. Zavertyaev^{15,c}, M. Zdybal³³,
M. Zeng³, D. Zhang⁷, L. Zhang³, S. Zhang⁴, W.C. Zhang^{3,z}, Y. Zhang⁴⁷, A. Zhelezov¹⁶,
Y. Zheng⁵, X. Zhou⁵, Y. Zhou⁵, X. Zhu³, V. Zhukov^{13,39}, J.B. Zonneveld⁵⁷, S. Zucchelli^{19,e}.

¹ Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil

² Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

³ Center for High Energy Physics, Tsinghua University, Beijing, China

⁴ School of Physics State Key Laboratory of Nuclear Physics and Technology, Peking University, Beijing, China

⁵ University of Chinese Academy of Sciences, Beijing, China

⁶ Institute Of High Energy Physics (IHEP), Beijing, China

⁷ Institute of Particle Physics, Central China Normal University, Wuhan, Hubei, China

⁸ Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, IN2P3-LAPP, Annecy, France

⁹ Université Clermont Auvergne, CNRS/IN2P3, LPC, Clermont-Ferrand, France

¹⁰ Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, France

¹¹ Laboratoire de Physique des 2 Infinis Irène Joliot-Curie, IJCLab, Orsay, France

¹² LPNHE, Sorbonne Université, Paris Diderot Sorbonne Paris Cité, CNRS/IN2P3, Paris, France

¹³ I. Physikalisches Institut, RWTH Aachen University, Aachen, Germany

¹⁴ Fakultät Physik, Technische Universität Dortmund, Dortmund, Germany

¹⁵ Max-Planck-Institut für Kernphysik (MPIK), Heidelberg, Germany

¹⁶ Physikalisches Institut, Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany

¹⁷ School of Physics, University College Dublin, Dublin, Ireland

¹⁸ INFN Sezione di Bari, Bari, Italy

¹⁹ INFN Sezione di Bologna, Bologna, Italy

²⁰ INFN Sezione di Ferrara, Ferrara, Italy

²¹ INFN Sezione di Firenze, Firenze, Italy

²² INFN Laboratori Nazionali di Frascati, Frascati, Italy

²³ INFN Sezione di Genova, Genova, Italy

- ²⁴ INFN Sezione di Milano-Bicocca, Milano, Italy
- ²⁵ INFN Sezione di Milano, Milano, Italy
- ²⁶ INFN Sezione di Cagliari, Monserrato, Italy
- ²⁷ INFN Sezione di Padova, Padova, Italy
- ²⁸ INFN Sezione di Pisa, Pisa, Italy
- ²⁹ INFN Sezione di Roma Tor Vergata, Roma, Italy
- ³⁰ INFN Sezione di Roma La Sapienza, Roma, Italy
- ³¹ Nikhef National Institute for Subatomic Physics, Amsterdam, Netherlands
- ³² Nikhef National Institute for Subatomic Physics and VU University Amsterdam, Amsterdam, Netherlands
- ³³ Henryk Niewodniczanski Institute of Nuclear Physics Polish Academy of Sciences, Kraków, Poland
- ³⁴ AGH - University of Science and Technology, Faculty of Physics and Applied Computer Science, Kraków, Poland
- ³⁵ National Center for Nuclear Research (NCBJ), Warsaw, Poland
- ³⁶ Horia Hulubei National Institute of Physics and Nuclear Engineering, Bucharest-Magurele, Romania
- ³⁷ Petersburg Nuclear Physics Institute NRC Kurchatov Institute (PNPI NRC KI), Gatchina, Russia
- ³⁸ Institute of Theoretical and Experimental Physics NRC Kurchatov Institute (ITEP NRC KI), Moscow, Russia, Moscow, Russia
- ³⁹ Institute of Nuclear Physics, Moscow State University (SINP MSU), Moscow, Russia
- ⁴⁰ Institute for Nuclear Research of the Russian Academy of Sciences (INR RAS), Moscow, Russia
- ⁴¹ Yandex School of Data Analysis, Moscow, Russia
- ⁴² Budker Institute of Nuclear Physics (SB RAS), Novosibirsk, Russia
- ⁴³ Institute for High Energy Physics NRC Kurchatov Institute (IHEP NRC KI), Protvino, Russia, Protvino, Russia
- ⁴⁴ ICCUB, Universitat de Barcelona, Barcelona, Spain
- ⁴⁵ Instituto Galego de Física de Altas Enerxías (IGFAE), Universidade de Santiago de Compostela, Santiago de Compostela, Spain
- ⁴⁶ Instituto de Física Corpuscular, Centro Mixto Universidad de Valencia - CSIC, Valencia, Spain
- ⁴⁷ European Organization for Nuclear Research (CERN), Geneva, Switzerland
- ⁴⁸ Institute of Physics, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
- ⁴⁹ Physik-Institut, Universität Zürich, Zürich, Switzerland
- ⁵⁰ NSC Kharkiv Institute of Physics and Technology (NSC KIPT), Kharkiv, Ukraine
- ⁵¹ Institute for Nuclear Research of the National Academy of Sciences (KINR), Kyiv, Ukraine
- ⁵² University of Birmingham, Birmingham, United Kingdom
- ⁵³ H.H. Wills Physics Laboratory, University of Bristol, Bristol, United Kingdom
- ⁵⁴ Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom
- ⁵⁵ Department of Physics, University of Warwick, Coventry, United Kingdom
- ⁵⁶ STFC Rutherford Appleton Laboratory, Didcot, United Kingdom
- ⁵⁷ School of Physics and Astronomy, University of Edinburgh, Edinburgh, United Kingdom
- ⁵⁸ School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom
- ⁵⁹ Oliver Lodge Laboratory, University of Liverpool, Liverpool, United Kingdom
- ⁶⁰ Imperial College London, London, United Kingdom
- ⁶¹ Department of Physics and Astronomy, University of Manchester, Manchester, United Kingdom
- ⁶² Department of Physics, University of Oxford, Oxford, United Kingdom
- ⁶³ Massachusetts Institute of Technology, Cambridge, MA, United States
- ⁶⁴ University of Cincinnati, Cincinnati, OH, United States
- ⁶⁵ University of Maryland, College Park, MD, United States
- ⁶⁶ Los Alamos National Laboratory (LANL), Los Alamos, United States
- ⁶⁷ Syracuse University, Syracuse, NY, United States
- ⁶⁸ Laboratory of Mathematical and Subatomic Physics, Constantine, Algeria, associated to ²

- ⁶⁹ *School of Physics and Astronomy, Monash University, Melbourne, Australia, associated to* ⁵⁵
⁷⁰ *Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Rio de Janeiro, Brazil, associated to* ²
⁷¹ *South China Normal University, Guangzhou, China, associated to* ³
⁷² *School of Physics and Technology, Wuhan University, Wuhan, China, associated to* ³
⁷³ *Departamento de Física, Universidad Nacional de Colombia, Bogota, Colombia, associated to* ¹²
⁷⁴ *Institut für Physik, Universität Rostock, Rostock, Germany, associated to* ¹⁶
⁷⁵ *Van Swinderen Institute, University of Groningen, Groningen, Netherlands, associated to* ³¹
⁷⁶ *National Research Centre Kurchatov Institute, Moscow, Russia, associated to* ³⁸
⁷⁷ *National University of Science and Technology “MISIS”, Moscow, Russia, associated to* ³⁸
⁷⁸ *National Research University Higher School of Economics, Moscow, Russia, associated to* ⁴¹
⁷⁹ *National Research Tomsk Polytechnic University, Tomsk, Russia, associated to* ³⁸
⁸⁰ *University of Michigan, Ann Arbor, United States, associated to* ⁶⁷

^a *Universidade Federal do Triângulo Mineiro (UFMT), Uberaba-MG, Brazil*

^b *Laboratoire Leprince-Ringuet, Palaiseau, France*

^c *P.N. Lebedev Physical Institute, Russian Academy of Science (LPI RAS), Moscow, Russia*

^d *Università di Bari, Bari, Italy*

^e *Università di Bologna, Bologna, Italy*

^f *Università di Cagliari, Cagliari, Italy*

^g *Università di Ferrara, Ferrara, Italy*

^h *Università di Genova, Genova, Italy*

ⁱ *Università di Milano Bicocca, Milano, Italy*

^j *Università di Roma Tor Vergata, Roma, Italy*

^k *Università di Roma La Sapienza, Roma, Italy*

^l *AGH - University of Science and Technology, Faculty of Computer Science, Electronics and Telecommunications, Kraków, Poland*

^m *DS4DS, La Salle, Universitat Ramon Llull, Barcelona, Spain*

ⁿ *Hanoi University of Science, Hanoi, Vietnam*

^o *Università di Padova, Padova, Italy*

^p *Università di Pisa, Pisa, Italy*

^q *Università degli Studi di Milano, Milano, Italy*

^r *Università di Urbino, Urbino, Italy*

^s *Università della Basilicata, Potenza, Italy*

^t *Scuola Normale Superiore, Pisa, Italy*

^u *Università di Modena e Reggio Emilia, Modena, Italy*

^v *Università di Siena, Siena, Italy*

^w *MSU - Iligan Institute of Technology (MSU-IIT), Iligan, Philippines*

^x *Novosibirsk State University, Novosibirsk, Russia*

^y *INFN Sezione di Trieste, Trieste, Italy*

^z *School of Physics and Information Technology, Shaanxi Normal University (SNNU), Xi'an, China*

^{aa} *Universidad Nacional Autonoma de Honduras, Tegucigalpa, Honduras*

[†] *Deceased*