



Erratum to: Observation of four-top-quark production in the multilepton final state with the ATLAS detector

ATLAS Collaboration*

CERN, 1211 Geneva 23, Switzerland

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Corrections to two figures, one table and the corresponding numbers in the text are noted for the paper. Systematic uncertainties arising from the comparison of the nominal $t\bar{t}t\bar{t}$ simulation with alternative samples generated with SHERPA and with MADGRAPH5_AMC@NLO+HERWIG7 were not applied when deriving limits on the top-quark Yukawa coupling, Higgs oblique parameter and EFT operators. This affects Figs. 8 and 9, and Table 8.

The changes in the text are noted for Sects. 9.1, 9.2 and 10.

- In Sect. 9.1, for the case when the $t\bar{t}t\bar{t}$ and $t\bar{t}H$ yields in each bin of the GNN distribution are parameterised as a function of κ_t and α and fixing the top-quark Yukawa coupling to be CP -even only, the observed limit is $|\kappa_t| < 1.9$ instead of $|\kappa_t| < 1.8$. If the $t\bar{t}H$ background yields are not parameterised, whilst the normalisation of the $t\bar{t}H$ background is treated as a free parameter of the fit, the observed (expected) limit is $|\kappa_t| < 2.3$ (1.9) instead of $|\kappa_t| < 2.2$ (1.8).
- In Sect. 9.2, the upper limits on the absolute values of the coefficients ($|C_i/\Lambda^2|$) of O_{QQ}^1 , O_{Qt}^1 , O_{tt}^1 and O_{Qt}^8 assuming only the linear terms are 6.6, 4.0, 2.8 and 10.8 TeV^{-2} , respectively, at 95% CL instead of 5.3, 3.3, 2.4 and 8.8 TeV^{-2} .
- In Sect. 9.2, the observed (expected) upper limit on the \hat{H} parameter is 0.23 (0.11) at 95% CL instead of 0.20 (0.12). The published expected upper limit of 0.12 was a mistake in the text and should have been 0.1 corresponding to the

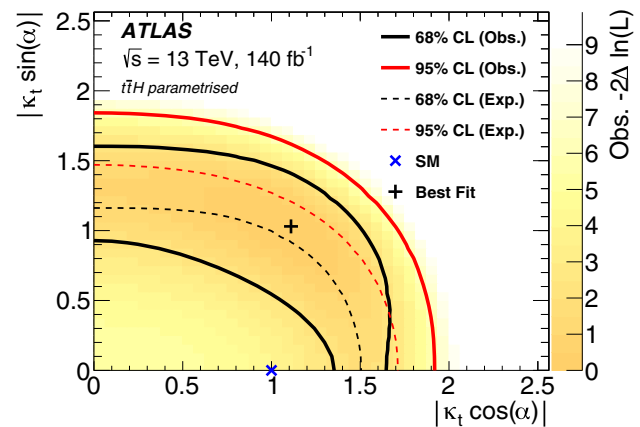


Fig. 8 Two-dimensional negative log-likelihood contours for $|\kappa_t \cos(\alpha)|$ versus $|\kappa_t \sin(\alpha)|$ at 68% and 95%, where κ_t is the top-Higgs Yukawa coupling strength parameter and α is the mixing angle between the CP -even and CP -odd components. The gradient-shaded area represents the observed likelihood value as a function of κ_t and α . Both the $t\bar{t}t\bar{t}$ signal and $t\bar{t}H$ background yields in each fitted bin are parameterised as a function of κ_t and α . The blue cross shows the SM expectation, while the black cross shows the best fit value

likelihood scan in Fig. 9. The observed limit is weaker than the largest value of this parameter equal to 0.2 that preserves unitarity in the perturbative theory.

- In Sect. 10, assuming a pure CP -even coupling ($\alpha = 0$), the observed upper limit on $|\kappa_t| = |y_t/y_t^{\text{SM}}|$ at 95% CL is 1.9 instead of 1.8. Assuming one operator taking effect at a time, the observed constraints on the coefficients (C_i/Λ^2) of O_{QQ}^1 , O_{Qt}^1 , O_{tt}^1 and O_{Qt}^8 are $[-4.0, 4.5]$, $[-3.8, 3.4]$, $[-1.9, 2.1]$ and $[-6.9, 7.6]$ TeV^{-2} , respectively. An observed upper limit at 95% CL of 0.23 is obtained for the Higgs oblique parameter that is weaker than the largest value that preserves unitarity in the perturbative theory.

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* e-mail: atlas.publications@cern.ch

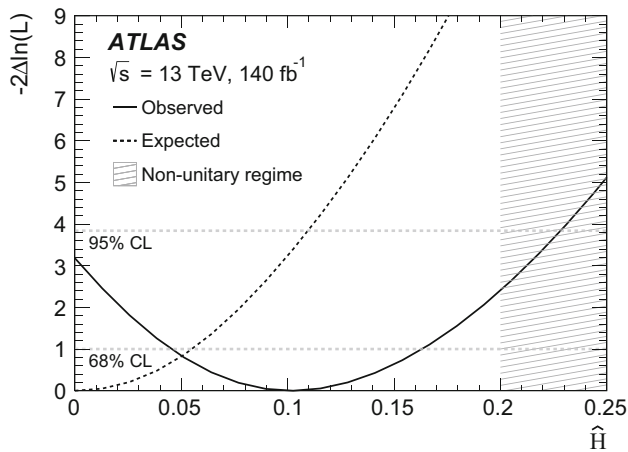


Fig. 9 The negative log-likelihood values as a function of the Higgs oblique parameter \hat{H} . The solid line represents the observed likelihood while the dashed line corresponds to the expected one. The shaded region shows the non-unitary regime

Table 8 Expected and observed 95% CL intervals on EFT coupling parameters assuming one EFT parameter variation in the fit

Operators	Expected C_i/Λ^2 [TeV^{-2}]	Observed C_i/Λ^2 [TeV^{-2}]
\mathcal{O}_{QQ}^1	[-2.5, 3.2]	[-4.0, 4.5]
\mathcal{O}_{Qt}^1	[-2.6, 2.1]	[-3.8, 3.4]
\mathcal{O}_n^1	[-1.2, 1.4]	[-1.9, 2.1]
\mathcal{O}_{Qt}^8	[-4.3, 5.1]	[-6.9, 7.6]

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ATLAS Collaboration*

G. Aad¹⁰², B. Abbott¹²⁰, K. Abeling⁵⁵, N. J. Abicht⁴⁹, S. H. Abidi²⁹, A. Aboulhorma^{35e}, H. Abramowicz¹⁵¹, H. Abreu¹⁵⁰, Y. Abulaiti¹¹⁷, A. C. Abusleme Hoffman^{137a}, B. S. Acharya^{69a,69b,p}, C. Adam Bourdarios⁴, L. Adamczyk^{86a}, L. Adamek¹⁵⁵, S. V. Addepalli²⁶, M. J. Addison¹⁰¹, J. Adelman¹¹⁵, A. Adiguzel^{21c}, T. Adye¹³⁴, A. A. Affolder¹³⁶, Y. Afik³⁶, M. N. Agaras¹³, J. Agarwala^{73a,73b}, A. Aggarwal¹⁰⁰, C. Agheorghiesei^{27c}, A. Ahmad³⁶, F. Ahmadov^{38.ab}, W. S. Ahmed¹⁰⁴, S. Ahuja⁹⁵, X. Ai^{62a}, G. Aielli^{76a,76b}, M. Ait Tamlhat^{35c}, B. Aitbenkhik^{35a}, I. Aizenberg¹⁶⁹, M. Akbiyik¹⁰⁰, T. P. A. Åkesson⁹⁸, A. V. Akimov³⁷, D. Akiyama¹⁶⁸, N. N. Akolkar²⁴, K. Al Khoury⁴¹, G. L. Alberghi^{23b}, J. Albert¹⁶⁵, P. Albicocco⁵³, G. L. Albouy⁶⁰, S. Alderweireldt⁵², M. Aleksa³⁶, I. N. Aleksandrov³⁸, C. Alexa^{27b}, T. Alexopoulos¹⁰, A. Alfonsi¹¹⁴, F. Alfonsi^{23b}, M. Algren⁵⁶, M. Alhroob¹²⁰, B. Ali¹³², H. M. J. Ali⁹¹, S. Ali¹⁴⁸, S. W. Alibocus⁹², M. Aliev³⁷, G. Alimonti^{71a}, W. Alkakh⁵⁵, C. Allaire⁶⁶, B. M. M. Allbrooke¹⁴⁶, J. F. Allen⁵², C. A. Allendes Flores^{137f}, P. P. Allport²⁰, A. Aloisio^{72a,72b}, F. Alonso⁹⁰, C. Alpigianni¹³⁸, M. Alvarez Estevez⁹⁹, A. Alvarez Fernandez¹⁰⁰, M. Alves Cardoso⁵⁶, M. G. Alviggi^{72a,72b}, M. Aly¹⁰¹, Y. Amaral Coutinho^{83b}, A. Ambler¹⁰⁴, C. Amelung³⁶, M. Ameri¹⁰¹, C. G. Ames¹⁰⁹, D. Amidei¹⁰⁶, S. P. Amor Dos Santos^{130a}, K. R. Amos¹⁶³, V. Ananiev¹²⁵, C. Anastopoulos¹³⁹, T. Andeen¹¹, J. K. Anders³⁶, S. Y. Andreev^{47a,47b}, A. Andreatta^{71a,71b}, S. Angelidakis⁹, A. Angerami^{41.ae}, A. V. Anisenkov³⁷, A. Annovi^{74a}, C. Antel⁵⁶, M. T. Anthony¹³⁹, E. Antipov¹⁴⁵, M. Antonelli⁵³, D. J. A. Antrim^{17a}, F. Anulli^{75a}, M. Aoki⁸⁴, T. Aoki¹⁵³, J. A. Aparisi Pozo¹⁶³, M. A. Aparo¹⁴⁶, L. Aperio Bella⁴⁸, C. Appelt¹⁸, A. Apyan²⁶, N. Aranzabal³⁶, C. Arcangeletti⁵³, A. T. H. Arce⁵¹, E. Arena⁹², J-F. Arguin¹⁰⁸, S. Argyropoulos⁵⁴, J.-H. Arling⁴⁸, O. Arnaez⁴, H. Arnold¹¹⁴, Z. P. Arrubarrena Tame¹⁰⁹, G. Artoni^{75a,75b}, H. Asada¹¹¹, K. Asai¹¹⁸, S. Asai¹⁵³, N. A. Asbah⁶¹, J. Assahsah^{35d}, K. Assamagan²⁹, R. Astalos^{28a}, S. Atashi¹⁶⁰, R. J. Atkin^{33a}, M. Atkinson¹⁶², N. B. Atlay¹⁸, H. Atmani^{62b}, P. A. Atlasiddha¹⁰⁶, K. Augsten¹³², S. Auricchio^{72a,72b}, A. D. Aurio²⁰, V. A. Austrup¹⁰¹, G. Avolio³⁶, K. Axiotis⁵⁶, G. Azuelos^{108.ab}, D. Babal^{28b}, H. Bachacou¹³⁵, K. Bachas^{152.s}, A. Bachi³⁴, F. Backman^{47a,47b}, A. Badea⁶¹, P. Bagnaia^{75a,75b}, M. Bahmani¹⁸, A. J. Bailey¹⁶³, V. R. Bailey¹⁶², J. T. Baines¹³⁴, L. Baines⁹⁴, C. Bakalis¹⁰, O. K. Baker¹⁷², E. Bakos¹⁵, D. Bakshi Gupta⁸, R. Balasubramanian¹¹⁴, E. M. Baldin³⁷, P. Balek^{86a}, E. Ballabene^{23b,23a}, F. Balli¹³⁵, L. M. Baltes^{63a}, W. K. Balunas³², J. Balz¹⁰⁰, E. Banas⁸⁷, M. Bandieramonte¹²⁹, A. Bandyopadhyay²⁴, S. Bansal²⁴, L. Barak¹⁵¹, M. Barakat⁴⁸, E. L. Barberio¹⁰⁵, D. Barberis^{57b,57a}, M. Barbero¹⁰², G. Barbour⁹⁶, K. N. Barends^{33a}, T. Barillari¹¹⁰, M.-S. Barisits³⁶, T. Barklow¹⁴³, P. Baron¹²², D. A. Baron Moreno¹⁰¹, A. Baroncelli^{62a}, G. Barone²⁹, A. J. Barr¹²⁶, J. D. Barr⁹⁶, L. Barranco Navarro^{47a,47b}, F. Barreiro⁹⁹, J. Barreiro Guimarães da Costa^{14a}, U. Barron¹⁵¹, M. G. Barros Teixeira^{130a}, S. Barsov³⁷, F. Bartels^{63a}, R. Bartoldus¹⁴³, A. E. Barton⁹¹, P. Bartos^{28a}, A. Basan¹⁰⁰, M. Baselga⁴⁹, A. Bassalat^{66.al}, M. J. Basso^{156a}, C. R. Basson¹⁰¹, R. L. Bates⁵⁹, S. Batlamous^{35c}, J. R. Batley³², B. Batool¹⁴¹, M. Battaglia¹³⁶, D. Battulga¹⁸, M. Bause^{75a,75b}, M. Bauer³⁶, P. Bauer²⁴, L. T. Bazzano Hurrell³⁰, J. B. Beacham⁵¹, T. Beau¹²⁷, P. H. Beauchemin¹⁵⁸, F. Becherer⁵⁴, P. Bechtel²⁴, H. P. Beck^{19.r}, K. Becker¹⁶⁷, A. J. Beddall⁸², V. A. Bednyakov³⁸, C. P. Bee¹⁴⁵, L. J. Beemster¹⁵, T. A. Beermann³⁶, M. Begalli^{83d}, M. Begel²⁹, A. Behera¹⁴⁵, J. K. Behr⁴⁸, J. F. Beirer⁵⁵, F. Beisiegel²⁴, M. Belfkir¹⁵⁹, G. Bella¹⁵¹, L. Bellagamba^{23b}, A. Bellerive³⁴, P. Bellos²⁰, K. Beloborodov³⁷, N. L. Belyaev³⁷, D. Bencheikroun^{35a}, F. Bendebba^{35a}, Y. Benhammou¹⁵¹, M. Benoit²⁹, J. R. Bensinger²⁶, S. Bentvelsen¹¹⁴, L. Beresford⁴⁸, M. Beretta⁵³, E. Bergeas Kuutmann¹⁶¹, N. Berger⁴, B. Bergmann¹³², J. Beringer^{17a}, G. Bernardi⁵, C. Bernius¹⁴³, F. U. Bernlochner²⁴, F. Bernon^{36,102}, T. Berry⁹⁵, P. Berta¹³³, A. Berthold⁵⁰, I. A. Bertram⁹¹, S. Bethke¹¹⁰, A. Betti^{75a,75b}, A. J. Bevan⁹⁴, M. Bhamjee^{33c}, S. Bhatta¹⁴⁵, D. S. Bhattacharya¹⁶⁶, P. Bhattacharai²⁶, V. S. Bhopatkar¹²¹, R. Bi^{29.aj}, R. M. Bianchi¹²⁹, G. Bianco^{23a,23b}, O. Biebel¹⁰⁹, R. Bielski¹²³, M. Biglietti^{77a}, T. R. V. Billoud¹³², M. Bindi⁵⁵, A. Bingul^{21b}, C. Bini^{75a,75b}, A. Biondini⁹², C. J. Birch-sykes¹⁰¹, G. A. Bird^{20,134}, M. Birman¹⁶⁹, M. Biros¹³³, T. Bisanz⁴⁹, E. Bisceglie^{43a,43b}, D. Biswas¹⁴¹, A. Bitadze¹⁰¹, K. Björke¹²⁵, I. Bloch⁴⁸, C. Blocker²⁶, A. Blue⁵⁹, U. Blumenschein⁹⁴, J. Blumenthal¹⁰⁰, G. J. Bobbink¹¹⁴, V. S. Bobrovnikov³⁷, M. Boehler⁵⁴, B. Boehm¹⁶⁶, D. Bogavac³⁶, A. G. Bogdanichikov³⁷, C. Bohm^{47a}, V. Boisvert⁹⁵, P. Bokan⁴⁸, T. Bold^{86a}, M. Bomben⁵, M. Bona⁹⁴, M. Boonekamp¹³⁵, C. D. Booth⁹⁵, A. G. Borbély⁵⁹, I. S. Bordulev³⁷, H. M. Borecka-Bielska¹⁰⁸, L. S. Borgna⁹⁶, G. Borissov⁹¹, D. Bortoletto¹²⁶, D. Boscherini^{23b}, M. Bosman¹³, J. D. Bossio Sola³⁶, K. Bouaouda^{35a}, N. Bouchhar¹⁶³, J. Boudreau¹²⁹, E. V. Bouhova-Thacker⁹¹, D. Boumediene⁴⁰, R. Bouquet⁵, A. Boveia¹¹⁹, J. Boyd³⁶, D. Boye²⁹, I. R. Boyko³⁸, J. Bracinik²⁰, N. Brahimi^{62d}, G. Brandt¹⁷¹, O. Brandt³², F. Braren⁴⁸, B. Brau¹⁰³

J. E. Brau¹²³ , R. Brenner¹⁶⁹ , L. Brenner¹¹⁴ , R. Brenner¹⁶¹ , S. Bressler¹⁶⁹ , D. Britton⁵⁹ , D. Britzger¹¹⁰ , I. Brock²⁴ , G. Brooijmans⁴¹ , W. K. Brooks^{137f} , E. Brost²⁹ , L. M. Brown^{165,n} , L. E. Bruce⁶¹ , T. L. Bruckler¹²⁶ , P. A. Bruckman de Renstrom⁸⁷ , B. Brüers⁴⁸ , D. Bruncko^{28b,*} , A. Bruni^{23b} , G. Bruni^{23b} , M. Bruschi^{23b} , N. Bruscinò^{75a,75b} , T. Buanes¹⁶ , Q. Buat¹³⁸ , D. Buchin¹¹⁰ , A. G. Buckley⁵⁹ , M. K. Bugge¹²⁵ , O. Bulekov³⁷ , B. A. Bullard¹⁴³ , S. Burdin⁹² , C. D. Burgard⁴⁹ , A. M. Burger⁴⁰ , B. Burghgrave⁸ , O. Burlayenko⁵⁴ , J. T. P. Burr³² , C. D. Burton¹¹ , J. C. Burzynski¹⁴² , E. L. Busch⁴¹ , V. Büscher¹⁰⁰ , P. J. Bussey⁵⁹ , J. M. Butler²⁵ , C. M. Buttar⁵⁹ , J. M. Butterworth⁹⁶ , W. Buttinger¹³⁴ , C. J. Buxo Vazquez¹⁰⁷ , A. R. Buzykaev³⁷ , G. Cabras^{23b} , S. Cabrera Urbán¹⁶³ , D. Caforio⁵⁸ , H. Cai¹²⁹ , Y. Cai^{14a,14e} , V. M. M. Cairo³⁶ , O. Cakir^{3a} , N. Calace³⁶ , P. Calafiura^{17a}

, G. Calderini¹²⁷ , P. Calfayan⁶⁸ , G. Callea⁵⁹ , L. P. Caloba^{83b} , D. Calvet⁴⁰ , S. Calvet⁴⁰ , T. P. Calvet¹⁰² , M. Calvetti^{74a,74b} , R. Camacho Toro¹²⁷ , S. Camarda³⁶ , D. Camarero Munoz²⁶ , P. Camarri^{76a,76b} , M. T. Camerlingo^{72a,72b} , D. Cameron¹²⁵ , C. Camincher¹⁶⁵ , M. Campanelli⁹⁶ , A. Camplani⁴² , V. Canale^{72a,72b} , A. Canesse¹⁰⁴ , M. Cano Bret⁸⁰ , J. Cantero¹⁶³ , Y. Cao¹⁶² , F. Capocasa²⁶ , M. Capua^{43b,43a} , A. Carbone^{71a,71b} , R. Cardarelli^{76a} , J. C. J. Cardenas⁸ , F. Cardillo¹⁶³ , T. Carli³⁶ , G. Carlino^{72a} , J. I. Carlotto¹³ , B. T. Carlson^{129,t} , E. M. Carlson^{165,156a} , L. Carminati^{71a,71b} , A. Carnelli¹³⁵ , M. Carnesale^{75a,75b} , S. Caron¹¹³ , E. Carquin^{137f} , S. Carrá^{71a,71b} , G. Carratta^{23b,23a} , F. Carrio Argos^{33g} , J. W. S. Carter¹⁵⁵ , T. M. Carter⁵² , M. P. Casado^{13,j} , M. Caspar⁴⁸ , E. G. Castiglia¹⁷² , F. L. Castillo⁴ , L. Castillo Garcia¹³ , V. Castillo Gimenez¹⁶³ , N. F. Castro^{130a,130c} , A. Catinaccio³⁶ , J. R. Catmore¹²⁵ , V. Cavaliere²⁹ , N. Cavalli^{23b,23a}

, V. Cavasinni^{74a,74b} , Y. C. Cekmecelioglu⁴⁸ , E. Celebi^{21a} , F. Celli¹²⁶ , M. S. Centonze^{70a,70b} , K. Cerny¹²² , A. S. Cerqueira^{83a} , A. Cerri¹⁴⁶ , L. Cerrito^{76a,76b} , F. Cerutti^{17a} , B. Cervato¹⁴¹ , A. Cervelli^{23b} , G. Cesarini⁵³ , S. A. Cetin⁸² , Z. Chadi^{35a} , D. Chakraborty¹¹⁵ , M. Chala^{130f} , J. Chan¹⁷⁰ , W. Y. Chan¹⁵³ , J. D. Chapman³² , E. Chapon¹³⁵ , B. Chargeishvili^{149b} , D. G. Charlton²⁰ , T. P. Charman⁹⁴ , M. Chatterjee¹⁹ , C. Chauhan¹³³ , S. Chekanov⁶ , S. V. Chekulaev^{156a} , G. A. Chelkov^{38,a} , A. Chen¹⁰⁶ , B. Chen¹⁵¹ , B. Chen¹⁶⁵ , H. Chen^{14c} , H. Chen²⁹ , J. Chen^{62c} , J. Chen¹⁴² , M. Chen¹²⁶ , S. Chen¹⁵³ , S. J. Chen^{14c} , X. Chen^{62c} , X. Chen^{14b,ag} , Y. Chen^{62a} , C. L. Cheng¹⁷⁰ , H. C. Cheng^{64a} , S. Cheong¹⁴³ , A. Cheplakov³⁸ , E. Cheremushkina⁴⁸ , E. Cherepanova¹¹⁴ , R. Cherkaoui El Moursli^{35e} , E. Cheu⁷ , K. Cheung⁶⁵ , L. Chevalier¹³⁵ , V. Chiarella⁵³ , G. Chiarelli^{74a}

, N. Chiedde¹⁰² , G. Chiodini^{70a} , A. S. Chisholm²⁰ , A. Chitan^{27b} , M. Chitishvili¹⁶³ , M. V. Chizhov³⁸ , K. Choi¹¹ , A. R. Chomont^{75a,75b} , Y. Chou¹⁰³ , E. Y. S. Chow¹¹⁴ , T. Chowdhury^{33g} , K. L. Chu¹⁶⁹ , M. C. Chu^{64a} , X. Chu^{14a,14e} , J. Chudoba¹³¹ , J. J. Chwastowski⁸⁷ , D. Cieri¹¹⁰ , K. M. Ciesla^{86a} , V. Cindro⁹³ , A. Ciocio^{17a} , F. Ciroto^{72a,72b} , Z. H. Citron¹⁶⁹ , M. Citterio^{71a} , D. A. Ciubotaru^{27b} , B. M. Ciungu¹⁵⁵ , A. Clark⁵⁶ , P. J. Clark⁵² , J. M. Clavijo Columbie⁴⁸ , S. E. Clawson⁴⁸ , C. Clement^{47a,47b} , J. Clercx⁴⁸ , L. Clissa^{23a,23b} , Y. Coadou¹⁰² , M. Cobal^{69a,69c} , A. Coccaro^{57b} , R. F. Coelho Barrue^{130a} , R. Coelho Lopes De Sa¹⁰³ , S. Coelli^{71a} , H. Cohen¹⁵¹ , A. E. C. Coimbra^{71a,71b} , B. Cole⁴¹ , J. Collot⁶⁰ , P. Conde Muñio^{130a,130g} , M. P. Connell^{33c} , S. H. Connell^{33c} , I. A. Connelly⁵⁹ , E. I. Conroy¹²⁶ , F. Conventi^{72a,ai} , H. G. Cooke²⁰ , A. M. Cooper-Sarkar¹²⁶ , A. Cordeiro Oudot Choi¹²⁷ , F. Cormier¹⁶⁴ , L. D. Corpe⁴⁰ , M. Corradi^{75a,75b}

, F. Corriveau^{104,z} , A. Cortes-Gonzalez¹⁸ , M. J. Costa¹⁶³ , F. Costanza⁴ , D. Costanzo¹³⁹ , B. M. Cote¹¹⁹ , G. Cowan⁹⁵ , K. Cranmer¹⁷⁰ , D. Cremonini^{23a,23b} , S. Crépe-Renaudin⁶⁰ , F. Crescioli¹²⁷ , M. Cristinziani¹⁴¹ , M. Cristoforetti^{78a,78b} , V. Croft¹¹⁴ , J. E. Crosby¹²¹ , G. Crossetti^{43a,43b} , A. Cueto⁹⁹ , T. Cuhadar Donszelmann¹⁶⁰ , H. Cui^{14a,14e} , Z. Cui⁷ , W. R. Cunningham⁵⁹ , F. Curcio^{43a,43b} , P. Czodrowski³⁶ , M. M. Czurylo^{63b} , M. J. Da Cunha Sargedas De Sousa^{62a} , J. V. Da Fonseca Pinto^{83b} , C. Da Via¹⁰¹ , W. Dabrowski^{86a} , T. Dado⁴⁹ , S. Dahbi^{33g} , T. Dai¹⁰⁶ , C. Dallapiccola¹⁰³ , M. Dam⁴² , G. D'amen²⁹ , V. D'Amico¹⁰⁹ , J. Damp¹⁰⁰ , J. R. Dandoy¹²⁸ , M. F. Daneri³⁰ , M. Danninger¹⁴² , V. Dao³⁶ , G. Darbo^{57b} , S. Darmora⁶ , S. J. Das²⁹ , S. D'Auria^{71a,71b} , C. David^{156b} , T. Davidek¹³³ , B. Davis-Purcell³⁴ , I. Dawson⁹⁴ , H. A. Day-hall¹³² , K. De⁸ , R. De Asmundis^{72a} , N. De Biase⁴⁸ , S. De Castro^{23a,23b} , N. De Groot¹¹³

, P. de Jong¹¹⁴ , H. De la Torre¹⁰⁷ , A. De Maria^{14c} , A. De Salvo^{75a} , U. De Sanctis^{76a,76b} , A. De Santo¹⁴⁶ , J. B. De Vivie De Regie⁶⁰ , D. V. Dedovich³⁸ , J. Degens¹¹⁴ , A. M. Deiana⁴⁴ , F. Del Corso^{23a,23b} , J. Del Peso⁹⁹ , F. Del Rio^{63a} , F. Deliot¹³⁵ , C. M. Delitzsch⁴⁹

L. Diehl⁵⁴, S. Díez Cornell⁴⁸, C. Díez Pardos¹⁴¹, C. Dimitriadis^{24,161}, A. Dimitrievska^{17a}, J. Dingfelder²⁴, I. M. Dinu^{27b}, S. J. Dittmeier^{63b}, F. Dittus³⁶, F. Djama¹⁰², T. Djobava^{149b}, J. I. Djuvsland¹⁶, C. Doglioni^{98,101}, J. Dolejsi¹³³, Z. Dolezal¹³³, M. Donadelli^{83c}, B. Dong¹⁰⁷, J. Donini⁴⁰, A. D'Onofrio^{77a,77b}, M. D'Onofrio⁹², J. Dopke¹³⁴, A. Doria^{72a}, N. Dos Santos Fernandes^{130a}, M. T. Dova⁹⁰, A. T. Doyle⁵⁹, M. A. Draguet¹²⁶, E. Dreyer¹⁶⁹, I. Drivas-koulouris¹⁰, A. S. Drobac¹⁵⁸, M. Drozdova⁵⁶, D. Du^{62a}, T. A. du Pree¹¹⁴, F. Dubinin³⁷, M. Dubovsky^{28a}, E. Duchovni¹⁶⁹, G. Duckeck¹⁰⁹, O. A. Ducu^{27b}, D. Duda⁵², A. Dudarev³⁶, E. R. Duden²⁶, M. D'uffizi¹⁰¹, L. Duflot⁶⁶, M. Dührssen³⁶, C. Dülsen¹⁷¹, A. E. Dumitriu^{27b}, M. Dunford^{63a}, S. Dungs⁴⁹, K. Dunne^{47a,47b}, A. Duperrin¹⁰², H. Duran Yildiz^{3a}, M. Düren⁵⁸, A. Durglishvili^{149b}, G. P. O. Durieux⁸, B. L. Dwyer¹¹⁵, G. I. Dyckes^{17a}, M. Dyndal^{86a}, S. Dysch¹⁰¹, B. S. Dziedzic⁸⁷, Z. O. Earnshaw¹⁴⁶, G. H. Eberwein¹²⁶, B. Eckerova^{28a}, S. Eggebrecht⁵⁵, M. G. Eggleston⁵¹, E. Egidio Purcino De Souza¹²⁷, L. F. Ehrke⁵⁶, G. Eigen¹⁶, K. Einsweiler^{17a}, T. Ekelof¹⁶¹, P. A. Ekman⁹⁸, S. El Farkh^{35b}, Y. El Ghazali^{35b}, H. El Jarrari^{35e,148}, A. El Moussaouy^{35a}, V. Ellajosyula¹⁶¹, M. Ellert¹⁶¹, F. Ellinghaus¹⁷¹, A. A. Elliot⁹⁴, N. Ellis³⁶, J. Elmsheuser²⁹, M. Elsing³⁶, D. Emelianov¹³⁴, Y. Enari¹⁵³, I. Ene^{17a}, S. Epari¹³, J. Erdmann⁴⁹, P. A. Erland⁸⁷, M. Errenst¹⁷¹, M. Escalier⁶⁶, C. Escobar¹⁶³, E. Etzion¹⁵¹, G. Evans^{130a}, H. Evans⁶⁸, L. S. Evans⁹⁵, M. O. Evans¹⁴⁶, A. Ezhilov³⁷, S. Ezzarqouni^{35a}, F. Fabbri⁵⁹, L. Fabbri^{23a,23b}, G. Facini⁹⁶, V. Fadeyev¹³⁶, R. M. Fakhruddinov³⁷, S. Falciano^{75a}, L. F. Falda Ulhoa Coelho³⁶, P. J. Falke²⁴, J. Faltova¹³³, C. Fan¹⁶², Y. Fan^{14a}, Y. Fang^{14a,14e}, M. Fanti^{71a,71b}, M. Faraj^{69a,69b}, Z. Farazpay⁹⁷, A. Farbin⁸, A. Farilla^{77a}, T. Farooque¹⁰⁷, S. M. Farrington⁵², F. Fassi^{35e}, D. Fassouliotis⁹, M. Fauci Giannelli^{76a,76b}, W. J. Fawcett³², L. Fayard⁶⁶, P. Federic¹³³, P. Federicova¹³¹, O. L. Fedin^{37a}, G. Fedotov³⁷, M. Feickert¹⁷⁰, L. Feligioni¹⁰², D. E. Fellers¹²³, C. Feng^{62b}, M. Feng^{14b}, Z. Feng¹¹⁴, M. J. Fenton¹⁶⁰, A. B. Fenyuk³⁷, L. Ferencz⁴⁸, R. A. M. Ferguson⁹¹, S. I. Fernandez Luengo^{137f}, M. J. V. Fernoux¹⁰², J. Ferrando⁴⁸, A. Ferrari¹⁶¹, P. Ferrari^{113,114}, R. Ferrari^{73a}, D. Ferrere⁵⁶, C. Ferretti¹⁰⁶, F. Fiedler¹⁰⁰, A. Filipčić⁹³, E. K. Filmer¹, F. Filthaut¹¹³, M. C. N. Fiolhais^{130a,130c,c}, L. Fiorini¹⁶³, W. C. Fisher¹⁰⁷, T. Fitschen¹⁰¹, P. M. Fitzhugh¹³⁵, I. Fleck¹⁴¹, P. Fleischmann¹⁰⁶, T. Flick¹⁷¹, L. Flores¹²⁸, M. Flores^{33d}, L. R. Flores Castillo^{64a}, L. Flores Sanz De Acedo³⁶, F. M. Follega^{78a,78b}, N. Fomin¹⁶, J. H. Foo¹⁵⁵, B. C. Forland⁶⁸, A. Formica¹³⁵, A. C. Forti¹⁰¹, E. Fortin³⁶, A. W. Fortman⁶¹, M. G. Foti^{17a}, L. Fountas⁹, D. Fournier⁶⁶, H. Fox⁹¹, P. Francavilla^{74a,74b}, S. Francescato⁶¹, S. Franchellucci⁵⁶, M. Franchini^{23a,23b}, S. Franchino^{63a}, D. Francis³⁶, L. Franco¹¹³, L. Franconi⁴⁸, M. Franklin⁶¹, G. Frattari²⁶, A. C. Freegard⁹⁴, W. S. Freund^{83b}, Y. Y. Frid¹⁵¹, N. Fritzsche⁵⁰, A. Froch⁵⁴, D. Froidevaux³⁶, J. A. Frost¹²⁶, Y. Fu^{62a}, M. Fujimoto¹¹⁸, E. Fullana Torregrosa^{163,*}, K. Y. Fung^{64a}, E. Furtado De Simas Filho^{83b}, M. Furukawa¹⁵³, J. Fuster¹⁶³, A. Gabrielli^{23a,23b}, A. Gabrielli¹⁵⁵, P. Gadov³⁶, G. Gagliardi^{57a,57b}, L. G. Gagnon^{17a}, E. J. Gallas¹²⁶, B. J. Gallop¹³⁴, K. K. Gan¹¹⁹, S. Ganguly¹⁵³, J. Gao^{62a}, Y. Gao⁵², F. M. Garay Walls^{137a,137b}, B. Garcia^{29,aj}, C. García¹⁶³, A. Garcia Alonso¹¹⁴, A. G. Garcia Caffaro¹⁷², J. E. García Navarro¹⁶³, M. Garcia-Sciveres^{17a}, G. L. Gardner¹²⁸, R. W. Gardner³⁹, N. Garelli¹⁵⁸, D. Garg⁸⁰, R. B. Garg¹⁴³, J. M. Gargan⁵², C. A. Garner¹⁵⁵, S. J. Gasiorowski¹³⁸, P. Gaspar^{83b}, G. Gaudio^{73a}, V. Gautam¹³, P. Gauzzi^{75a,75b}, I. L. Gavrilenko³⁷, A. Gavriluk³⁷, C. Gay¹⁶⁴, G. Gaycken⁴⁸, E. N. Gazis¹⁰, A. A. Geanta^{27b}, C. M. Gee¹³⁶, C. Gemme^{57b}, M. H. Genest⁶⁰, S. Gentile^{75a,75b}, S. George⁹⁵, W. F. George²⁰, T. Gerialis⁴⁶, P. Gessinger-Befurt³⁶, M. E. Geyik¹⁷¹, M. Ghneimat¹⁴¹, K. Ghorbanian⁹⁴, A. Ghosal¹⁴¹, A. Ghosh¹⁶⁰, A. Ghosh⁷, B. Giacobbe^{23b}, S. Giagu^{75a,75b}, P. Giannetti^{74a}, A. Giannini^{62a}, S. M. Gibson⁹⁵, M. Gignac¹³⁶, D. T. Gil^{86b}, A. K. Gilbert^{86a}, B. J. Gilbert⁴¹, D. Gillberg³⁴, G. Gilles¹¹⁴, N. E. K. Gillwald⁴⁸, L. Ginabat¹²⁷, D. M. Gingrich^{2,ah}, M. P. Giordani^{69a,69c}, P. F. Giraud¹³⁵, G. Giugliarelli^{69a,69c}, D. Giugni^{71a}, F. Giuli³⁶, I. Gkialas^{9,k}, L. K. Gladilin³⁷, C. Glasman⁹⁹, G. R. Gledhill¹²³, G. Glemža⁴⁸, M. Glisic¹²³, I. Gnesi^{43b,f}, Y. Go^{29,aj}, M. Goblirsch-Kolb³⁶, B. Gocke⁴⁹, D. Godin¹⁰⁸, B. Gokturk^{21a}, S. Goldfarb¹⁰⁵, T. Golling⁵⁶, M. G. D. Gololo^{33g}, D. Golubkov³⁷, J. P. Gombas¹⁰⁷, A. Gomes^{130a,130b}, G. Gomes Da Silva¹⁴¹, A. J. Gomez Delegido¹⁶³, R. Gonçalves^{130a,130c}, G. Gonella¹²³, L. Gonella²⁰, A. Gongadze^{149c}, F. Gonnella²⁰, J. L. Gonski⁴¹, R. Y. González Andana⁵², S. González de la Hoz¹⁶³, S. Gonzalez Fernandez¹³, R. Gonzalez Lopez⁹², C. Gonzalez Renteria^{17a}, R. Gonzalez Suarez¹⁶¹, S. Gonzalez-Sevilla⁵⁶, G. R. Gonzalvo Rodriguez¹⁶³, L. Goossens³⁶, P. A. Gorbounov³⁷, B. Gorini³⁶, E. Gorini^{70a,70b}, A. Gorišek⁹³, T. C. Gosart¹²⁸, A. T. Goshaw⁵¹, M. I. Gostkin³⁸, S. Goswami¹²¹, C. A. Gottardo³⁶, M. Gouighri^{35b}, V. Goumarre⁴⁸, A. G. Goussiou¹³⁸, N. Govender^{33c}, I. Grabowska-Bold^{86a}, K. Graham³⁴, E. Gramstad¹²⁵, S. Grancagnolo^{70a,70b}, M. Grandi¹⁴⁶, P. M. Gravila^{27f}, F. G. Gravili^{70a,70b}, H. M. Gray^{17a}, M. Greco^{70a,70b}, C. Grefe²⁴, I. M. Gregor⁴⁸, P. Grenier¹⁴³, C. Grieco¹³, A. A. Grillo¹³⁶, K. Grimm³¹, S. Grinstein^{13,w}, J.-F. Grivaz⁶⁶, E. Gross¹⁶⁹, J. Grosse-Knetter⁵⁵, C. Grud¹⁰⁶,

J. C. Grundy¹²⁶, L. Guan¹⁰⁶, W. Guan¹⁷⁰, C. Gubbels¹⁶⁴, J. G. R. Guerrero Rojas¹⁶³, G. Guerrieri^{69a,69c}, F. Guescini¹¹⁰, R. Gugel¹⁰⁰, J. A. M. Guhit¹⁰⁶, A. Guida¹⁸, T. Guillemain⁴, E. Guilloton^{134,167}, S. Guindon³⁶, F. Guo^{14a,14e}, J. Guo^{62c}, L. Guo⁴⁸, Y. Guo¹⁰⁶, R. Gupta⁴⁸, S. Gurbuz²⁴, S. S. Gurdasani⁵⁴, G. Gustavino³⁶, M. Guth⁵⁶, P. Gutierrez¹²⁰, L. F. Gutierrez Zagazeta¹²⁸, C. Gutschow⁹⁶, C. Gwenlan¹²⁶, C. B. Gwilliam⁹², E. S. Haaland¹²⁵, A. Haas¹¹⁷, M. Habedank⁴⁸, C. Haber^{17a}, H. K. Hadavand⁸, A. Hadeef¹⁰⁰, S. Hadzic¹¹⁰, J. J. Hahn¹⁴¹, E. H. Haines⁹⁶, M. Haleem¹⁶⁶, J. Haley¹²¹, J. J. Hall¹³⁹, G. D. Hallewell¹⁰², L. Halser¹⁹, K. Hamano¹⁶⁵, H. Hamdaoui^{35e}, M. Hamer²⁴, G. N. Hamity⁵², E. J. Hampshire⁹⁵, J. Han^{62b}, K. Han^{62a}, L. Han^{14c}, L. Han^{62a}, S. Han^{17a}, Y. F. Han¹⁵⁵, K. Hanagaki⁸⁴, M. Hance¹³⁶, D. A. Hangal^{41,ae}, H. Hanif¹⁴², M. D. Hank¹²⁸, R. Hankache¹⁰¹, J. B. Hansen⁴², J. D. Hansen⁴², P. H. Hansen⁴², K. Hara¹⁵⁷, D. Harada⁵⁶, T. Harenberg¹⁷¹, S. Harkusha³⁷, M. L. Harris¹⁰³, Y. T. Harris¹²⁶, J. Harrison¹³, N. M. Harrison¹¹⁹, P. F. Harrison¹⁶⁷, N. M. Hartman¹⁴³, N. M. Hartmann¹⁰⁹, Y. Hasegawa¹⁴⁰, A. Hasib⁵², S. Haug¹⁹, R. Hauser¹⁰⁷, C. M. Hawkes²⁰, R. J. Hawkins³⁶, Y. Hayashi¹⁵³, S. Hayashida¹¹¹, D. Hayden¹⁰⁷, C. Hayes¹⁰⁶, R. L. Hayes¹¹⁴, C. P. Hays¹²⁶, J. M. Hays⁹⁴, H. S. Hayward⁹², F. He^{62a}, M. He^{14a,14e}, Y. He¹⁵⁴, Y. He¹²⁷, N. B. Heatley⁹⁴, V. Hedberg⁹⁸, A. L. Heggelund¹²⁵, N. D. Hehir⁹⁴, C. Heidegger⁵⁴, K. K. Heidegger⁵⁴, W. D. Heidorn⁸¹, J. Heilman³⁴, S. Heim⁴⁸, T. Heim^{17a}, J. G. Heinlein¹²⁸, J. J. Heinrich¹²³, L. Heinrich¹¹⁰, J. Hejbal¹³¹, L. Helary⁴⁸, A. Held¹⁷⁰, S. Hellesund¹⁶, C. M. Helling¹⁶⁴, S. Hellman^{47a,47b}, R. C. W. Henderson⁹¹, L. Henkelmann³², A. M. Henriques Correia³⁶, H. Herde⁹⁸, Y. Hernández Jiménez¹⁴⁵, L. M. Herrmann²⁴, T. Herrmann⁵⁰, G. Herten⁵⁴, R. Hertenberger¹⁰⁹, L. Hervas³⁶, M. E. Hesping¹⁰⁰, N. P. Hessey^{156a}, H. Hibi⁸⁵, S. J. Hillier²⁰, J. R. Hinds¹⁰⁷, F. Hinterkeuser²⁴, M. Hirose¹²⁴, S. Hirose¹⁵⁷, D. Hirschbuehl¹⁷¹, T. G. Hitchings¹⁰¹, B. Hiti⁹³, J. Hobbs¹⁴⁵, R. Hobincu^{27e}, N. Hod¹⁶⁹, M. C. Hodgkinson¹³⁹, B. H. Hodgkinson³², A. Hoecker³⁶, J. Hofer⁴⁸, T. Holm²⁴, M. Holzbock¹¹⁰, L. B. A. H. Hommels³², B. P. Honan¹⁰¹, J. Hong^{62c}, T. M. Hong¹²⁹, B. H. Hooberman¹⁶², W. H. Hopkins⁶, Y. Horii¹¹¹, S. Hou¹⁴⁸, A. S. Howard⁹³, J. Howarth⁵⁹, J. Hoya⁶, M. Hrabovsky¹²², A. Hrynevich⁴⁸, T. Hryn'ova⁴, P. J. Hsu⁶⁵, S.-C. Hsu¹³⁸, Q. Hu⁴¹, Y. F. Hu^{14a,14e}, S. Huang^{64b}, X. Huang^{14c}, Y. Huang^{139,m}, Y. Huang^{14a}, Z. Huang¹⁰¹, Z. Hubacek¹³², M. Huebner²⁴, F. Huegging²⁴, T. B. Huffman¹²⁶, C. A. Hugli⁴⁸, M. Huhtinen³⁶, S. K. Huiberts¹⁶, R. Hulsken¹⁰⁴, N. Huseynov^{12,a}, J. Huston¹⁰⁷, J. Huth⁶¹, R. Hyneman¹⁴³, G. Iacobucci⁵⁶, G. Iakovidis²⁹, I. Ibragimov¹⁴¹, L. Iconomidou-Fayard⁶⁶, P. Iengo^{72a,72b}, R. Iguchi¹⁵³, T. Iizawa⁸⁴, Y. Ikegami⁸⁴, N. Ilic¹⁵⁵, H. Imam^{35a}, M. Ince Lezki⁵⁶, T. Ingebretsen Carlson^{47a,47b}, G. Introzzi^{73a,73b}, M. Iodice^{77a}, V. Ippolito^{75a,75b}, R. K. Irwin⁹², M. Ishino¹⁵³, W. Islam¹⁷⁰, C. Issever^{18,48}, S. Istin^{21a}, H. Ito¹⁶⁸, J. M. Iturbe Ponce^{64a}, R. Iuppa^{78a,78b}, A. Ivina¹⁶⁹, J. M. Izen⁴⁵, V. Izzo^{72a}, P. Jacka^{131,132}, P. Jackson¹, R. M. Jacobs⁴⁸, B. P. Jaeger¹⁴², C. S. Jagfeld¹⁰⁹, P. Jain⁵⁴, G. Jäkel¹⁷¹, K. Jakobs⁵⁴, T. Jakoubek¹⁶⁹, J. Jamieson⁵⁹, K. W. Janas^{86a}, A. E. Jaspan⁹², M. Javurkova¹⁰³, F. Jeanneau¹³⁵, L. Jeanty¹²³, J. Jejelava^{149a,ac}, P. Jenni^{54,h}, C. E. Jessiman³⁴, S. Jézéquel⁴, C. Jia^{62b}, J. Jia¹⁴⁵, X. Jia⁶¹, X. Jia^{14a,14e}, Z. Jia^{14c}, Y. Jiang^{62a}, S. Jiggins⁴⁸, J. Jimenez Pena¹³, S. Jin^{14c}, A. Jinaru^{27b}, O. Jinnouchi¹⁵⁴, P. Johansson¹³⁹, K. A. Johns⁷, J. W. Johnson¹³⁶, D. M. Jones³², E. Jones⁴⁸, P. Jones³², R. W. L. Jones⁹¹, T. J. Jones⁹², R. Joshi¹¹⁹, J. Jovicevic¹⁵, X. Ju^{17a}, J. J. Junggeburth³⁶, T. Junkermann^{63a}, A. Juste Rozas^{13,w}, M. K. Juzek⁸⁷, S. Kabana^{137e}, A. Kaczmarek⁸⁷, M. Kado¹¹⁰, H. Kagan¹¹⁹, M. Kagan¹⁴³, A. Kahn⁴¹, A. Kahn¹²⁸, C. Kahra¹⁰⁰, T. Kaji¹⁶⁸, E. Kajomovitz¹⁵⁰, N. Kakati¹⁶⁹, I. Kalaitzidou⁵⁴, C. W. Kalderon²⁹, A. Kamenshchikov¹⁵⁵, S. Kanayama¹⁵⁴, N. J. Kang¹³⁶, D. Kar^{33g}, K. Karava¹²⁶, M. J. Kareem^{156b}, E. Karentzos⁵⁴, I. Karkanas¹⁵², O. Karkout¹¹⁴, S. N. Karpov³⁸, Z. M. Karpova³⁸, V. Kartvelishvili⁹¹, A. N. Karyukhin³⁷, E. Kasimi¹⁵², J. Katzy⁴⁸, S. Kaur³⁴, K. Kawade¹⁴⁰, M. P. Kawale¹²⁰, T. Kawamoto¹³⁵, E. F. Kay³⁶, F. I. Kaya¹⁵⁸, S. Kazakos¹⁰⁷, V. F. Kazanin³⁷, Y. Ke¹⁴⁵, J. M. Keaveney^{33a}, R. Keeler¹⁶⁵, G. V. Kehris⁶¹, J. S. Keller³⁴, A. S. Kelly⁹⁶, J. J. Kempster¹⁴⁶, K. E. Kennedy⁴¹, P. D. Kennedy¹⁰⁰, O. Kepka¹³¹, B. P. Kerridge¹⁶⁷, S. Kersten¹⁷¹, B. P. Kerševan⁹³, S. Keshri⁶⁶, L. Keszeghova^{28a}, S. Ketabchi Haghighat¹⁵⁵, M. Khandoga¹²⁷, A. Khanov¹²¹, A. G. Kharlamov³⁷, T. Kharlamova³⁷, E. E. Khoda¹³⁸, T. J. Khoo¹⁸, G. Khoraiuli¹⁶⁶, J. Khubua^{149b}, Y. A. R. Khwaira⁶⁶, A. Kilgallon¹²³, D. W. Kim^{47a,47b}, Y. K. Kim³⁹, N. Kimura⁹⁶, A. Kirchoff⁵⁵, C. Kirfel²⁴, F. Kirfel²⁴, J. Kirk¹³⁴, A. E. Kiryunin¹¹⁰, C. Kitsaki¹⁰, O. Kivernyk²⁴, M. Klassen^{63a}, C. Klein³⁴, L. Klein¹⁶⁶, M. H. Klein¹⁰⁶, M. Klein⁹², S. B. Klein⁵⁶, U. Klein⁹², P. Klimek³⁶, A. Klimentov²⁹, T. Klioutchnikova³⁶, P. Kluit¹¹⁴, S. Kluth¹¹⁰, E. Kneringer⁷⁹, T. M. Knight¹⁵⁵, A. Knue⁵⁴, R. Kobayashi⁸⁸, S. F. Koch¹²⁶, M. Kocian¹⁴³, P. Kodyš¹³³, D. M. Koeck¹²³, P. T. Koenig²⁴, T. Koffas³⁴, M. Kolb¹³⁵, I. Koletsou⁴, T. Komarek¹²², K. Köneke⁵⁴, A. X. Y. Kong¹, T. Kono¹¹⁸, N. Konstantinidis⁹⁶, B. Konya⁹⁸, R. Kopeliansky⁶⁸

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














































































































































































































































































S. Mehlhase¹⁰⁹ , A. Mehta⁹² , D. Melini¹⁵⁰ , B. R. Mellado Garcia^{33g} , A. H. Melo⁵⁵ , F. Meloni⁴⁸ , A. M. Mendes Jacques Da Costa¹⁰¹ , H. Y. Meng¹⁵⁵ , L. Meng⁹¹ , S. Menke¹¹⁰ , M. Mentink³⁶ , E. Meoni^{43a,43b} , C. Merlassino¹²⁶ , L. Merola^{72a,72b} , C. Meroni^{71a} , G. Merz¹⁰⁶ , O. Meshkov³⁷ , J. Metcalfe⁶ , A. S. Mete⁶ , C. Meyer⁶⁸ , J.-P. Meyer¹³⁵ , R. P. Middleton¹³⁴ , L. Mijovic⁵² , G. Mikenberg¹⁶⁹ , M. Mikestikova¹³¹ , M. Mikuz⁹³ , H. Mildner¹⁰⁰ , A. Milic³⁶ , C. D. Milke⁴⁴ , D. W. Miller³⁹ , L. S. Miller³⁴ , A. Milov¹⁶⁹ , D. A. Milstead^{47a,47b} , T. Min^{14c} , A. A. Minaenko³⁷ , I. A. Minashvili^{149b} , L. Mince⁵⁹ , A. I. Mincer¹¹⁷ , B. Mindur^{86a} , M. Mineev³⁸ , Y. Mino⁸⁸ , L. M. Mir¹³ , M. Miralles Lopez¹⁶³ , M. Mironova^{17a} , A. Mishima¹⁵³ , M. C. Missio¹¹³ , T. Mitani¹⁶⁸ , A. Mitra¹⁶⁷ , V. A. Mitsou¹⁶³ , O. Miu¹⁵⁵ , P. S. Miyagawa⁹⁴ , Y. Miyazaki⁸⁹ , A. Mizukami⁸⁴ , T. Mkrtchyan^{63a} ,
M. Mlinarevic⁹⁶ , T. Mlinarevic⁹⁶ , M. Mlynarikova³⁶ , S. Mobius¹⁹ , K. Mochizuki¹⁰⁸ , P. Moder⁴⁸ , P. Mogg¹⁰⁹ , A. F. Mohammed^{14a,14c} , S. Mohapatra⁴¹ , G. Mokgatitswane^{33g} , L. Moleri¹⁶⁹ , B. Mondal¹⁴¹ , S. Mondal¹³² , G. Monig¹⁴⁶ , K. Mönig⁴⁸ , E. Monnier¹⁰² , L. Monsonis Romero¹⁶³ , J. Montejo Berlingen^{13,84} , M. Montella¹¹⁹ , F. Montereali^{77a,77b} , F. Monticelli⁹⁰ , S. Monzani^{69a,69c} , N. Morange⁶⁶ , A. L. Moreira De Carvalho^{130a} , M. Moreno Llacer¹⁶³ , C. Moreno Martinez⁵⁶ , P. Morettini^{57b} , S. Morgenstern³⁶ , M. Morii⁶¹ , M. Morinaga¹⁵³ , A. K. Morley³⁶ , F. Morodei^{75a,75b} , L. Morvaj³⁶ , P. Moschovakos³⁶ , B. Moser³⁶ , M. Mosidze^{149b} , T. Moskalets⁵⁴ , P. Moskvitina¹¹³ , J. Moss^{31,0} , E. J. W. Moyses¹⁰³ , O. Mtintsilana^{33g} , S. Muanza¹⁰² , J. Mueller¹²⁹ , D. Muenstermann⁹¹ , R. Müller¹⁹ , G. A. Mullier¹⁶¹ , A. J. Mullin³² , J. J. Mullin¹²⁸ , D. P. Mungo¹⁵⁵ , D. Munoz Perez¹⁶³ , F. J. Munoz Sanchez¹⁰¹ , M. Murin¹⁰¹ , W. J. Murray^{167,134} , A. Murrone^{71a,71b}

, J. M. Muse¹²⁰ , M. Muškinja^{17a} , C. Mwewa²⁹ , A. G. Myagkov^{37,a} , A. J. Myers⁸ , A. A. Myers¹²⁹ , G. Myers⁶⁸ , M. Myska¹³² , B. P. Nachman^{17a} , O. Nackenhorst⁴⁹ , A. Nag⁵⁰ , K. Nagai¹²⁶ , K. Nagano⁸⁴ , J. L. Nagle^{29,aj} , E. Nagy¹⁰² , A. M. Nairz³⁶ , Y. Nakahama⁸⁴ , K. Nakamura⁸⁴ , K. Nakkalil⁵ , H. Nanjo¹²⁴ , R. Narayan⁴⁴ , E. A. Narayanan¹¹² , I. Naryshkin³⁷ , M. Naseri³⁴ , S. Nasri¹⁵⁹ , C. Nass²⁴ , G. Navarro^{22a} , J. Navarro-Gonzalez¹⁶³ , R. Nayak¹⁵¹ , A. Nayaz¹⁸ , P. Y. Nechaeva³⁷ , F. Nechansky⁴⁸ , L. Nedic¹²⁶ , T. J. Neep²⁰ , A. Negri^{73a,73b} , M. Negrini^{23b} , C. Nellist¹¹⁴ , C. Nelson¹⁰⁴ , K. Nelson¹⁰⁶ , S. Nemecek¹³¹ , M. Nessi^{36,i} , M. S. Neubauer¹⁶² , F. Neuhaus¹⁰⁰ , J. Neundorff⁴⁸ , R. Newhouse¹⁶⁴ , P. R. Newman²⁰ , C. W. Ng¹²⁹ , Y. W. Y. Ng⁴⁸ , B. Ngair^{35e} , H. D. N. Nguyen¹⁰⁸ , R. B. Nickerson¹²⁶ , R. Nicolaidou¹³⁵ , J. Nielsen¹³⁶ , M. Niemeyer⁵⁵ , J. Niermann^{55,36}

, N. Nikiforou³⁶ , V. Nikolaenko^{37,a} , I. Nikolic-Audit¹²⁷ , K. Nikolopoulos²⁰ , P. Nilsson²⁹ , I. Ninca⁴⁸ , H. R. Nindhito⁵⁶ , G. Ninio¹⁵¹ , A. Nisati^{75a} , N. Nishu² , R. Nisius¹¹⁰ , J.-E. Nitschke⁵⁰ , E. K. Nkadimeng^{33g} , S. J. Noacco Rosende⁹⁰ , T. Nobe¹⁵³ , D. L. Noel³² , T. Nommensen¹⁴⁷ , M. B. Norfolk¹³⁹ , R. R. B. Norisam⁹⁶ , B. J. Norman³⁴ , J. Novak⁹³ , T. Novak⁴⁸ , L. Novotny¹³² , R. Novotny¹¹² , L. Nozka¹²² , K. Ntekas¹⁶⁰ , N. M. J. Nunes De Moura Junior^{83b} , E. Nurse⁹⁶ , J. Ocariz¹²⁷ , A. Ochi⁸⁵ , I. Ochoa^{130a} , S. Oerdek¹⁶¹ , J. T. Offermann³⁹ , A. Ogrodnik¹³³ , A. Oh¹⁰¹ , C. C. Ohm¹⁴⁴ , H. Oide⁸⁴ , R. Oishi¹⁵³ , M. L. Ojeda⁴⁸ , Y. Okazaki⁸⁸ , M. W. O'Keefe⁹² , Y. Okumura¹⁵³ , L. F. Oleiro Seabra^{130a} , S. A. Olivares Pino^{137d} , D. Oliveira Damazio²⁹ , D. Oliveira Goncalves^{83a} , J. L. Oliver¹⁶⁰ , A. Olszewski⁸⁷ , Ö. O. Öncel⁵⁴ , D. C. O'Neil¹⁴² , A. P. O'Neill¹⁹ , A. Onofre^{130a,130c} , P. U. E. Onyisi¹¹ , M. J. Oreglia³⁹

, G. E. Orellana⁹⁰ , D. Orestano^{77a,77b} , N. Orlando¹³ , R. S. Orr¹⁵⁵ , V. O'Shea⁵⁹ , L. M. Osojnak¹²⁸ , R. Ospanov^{62a} , G. Otero y Garzon³⁰ , H. Otono⁸⁹ , P. S. Ott^{63a} , G. J. Ottino^{17a} , M. Ouchrif^{35d} , J. Ouellette²⁹ , F. Ould-Saada¹²⁵ , M. Owen⁵⁹ , R. E. Owen¹³⁴ , K. Y. Oyulmaz^{21a} , V. E. Ozcan^{21a} , N. Ozturk⁸ , S. Ozturk⁸² , H. A. Pacey³² , A. Pacheco Pages¹³ , C. Padilla Aranda¹³ , G. Padovano^{75a,75b} , S. Pagan Griso^{17a} , G. Palacino⁶⁸ , A. Palazzo^{70a,70b} , S. Palestini³⁶ , J. Pan¹⁷² , T. Pan^{64a} , D. K. Panchal¹¹ , C. E. Pandini¹¹⁴ , J. G. Panduro Vazquez⁹⁵ , H. Pang^{14b} , P. Pani⁴⁸ , G. Panizzo^{69a,69c} , L. Paolozzi⁵⁶ , C. Papadatos¹⁰⁸ , S. Parajuli⁴⁴ , A. Paramonov⁶ , C. Paraskevopoulos¹⁰ , D. Paredes Hernandez^{64b} , T. H. Park¹⁵⁵ , M. A. Parker³² , F. Parodi^{57a,57b} , E. W. Parrish¹¹⁵ , V. A. Parrish⁵² , J. A. Parsons⁴¹ , U. Parzefall⁵⁴ , B. Pascual Dias¹⁰⁸ , L. Pascual Dominguez¹⁵¹ , F. Pasquali¹¹⁴ , E. Pasqualucci^{75a} , S. Passaggio^{57b}

, F. Pastore⁹⁵ , P. Pasuwan^{47a,47b} , P. Patel⁸⁷ , U. M. Patel⁵¹ , J. R. Pater¹⁰¹ , T. Pauly³⁶ , J. Parkes¹⁴³ , M. Pedersen¹²⁵ , R. Pedro^{130a} , S. V. Peleganchuk³⁷ , O. Penc³⁶ , E. A. Pender⁵² , H. Peng^{62a} , K. E. Penski¹⁰⁹ , M. Penzin³⁷ , B. S. Peralva⁸³

D. A. Pizzi³⁴ , L. Pizzimento^{76a,76b} , A. Pizzini¹¹⁴ , M.-A. Pleier²⁹ , V. Plesanovs⁵⁴, V. Pleskot¹³³ , E. Plotnikova³⁸, G. Poddar⁴ , R. Poettgen⁹⁸ , L. Poggioli¹²⁷ , I. Pokharel⁵⁵ , S. Polacek¹³³ , G. Polesello^{73a} , A. Poley^{142,156a} , R. Polifka¹³² , A. Polini^{23b} , C. S. Pollard¹⁶⁷ , Z. B. Pollock¹¹⁹ , V. Polychronakos²⁹ , E. Pompa Pacchi^{75a,75b} , D. Ponomarenko¹¹³ , L. Pontecorvo³⁶ , S. Popa^{27a} , G. A. Popeneciu^{27d} , A. Poreba³⁶ , D. M. Portillo Quintero^{156a} , S. Pospisil¹³² , M. A. Postill¹³⁹ , P. Postolache^{27c} , K. Potamianos¹⁶⁷ , P. P. Potepa^{86a} , I. N. Potrap³⁸ , C. J. Potter³² , H. Potti¹ , T. Poulsen⁴⁸ , J. Poveda¹⁶³ , M. E. Pozo Astigarraga³⁶ , A. Prades Ibanez¹⁶³ , J. Pretel⁵⁴ , D. Price¹⁰¹ , M. Primavera^{70a} , M. A. Principe Martin⁹⁹ , R. Privara¹²² , T. Procter⁵⁹ , M. L. Proffitt¹³⁸ , N. Proklova¹²⁸ , K. Prokofiev^{64c} , G. Proto¹¹⁰ , S. Protopopescu²⁹ , J. Proudfoot⁶ , M. Przybycien^{86a} , W. W. Przygoda^{86b} , J. E. Puddefoot¹³⁹ , D. Pudzha³⁷ , D. Pyatiizbyantseva³⁷ , J. Qian¹⁰⁶

, D. Qichen¹⁰¹ , Y. Qin¹⁰¹ , T. Qiu⁵² , A. Quadt⁵⁵ , M. Queitsch-Maitland¹⁰¹ , G. Quetant⁵⁶ , G. Rabanal Bolanos⁶¹ , D. Rafanoharana⁵⁴ , F. Ragusa^{71a,71b} , J. L. Rainbolt³⁹ , J. A. Raine⁵⁶ , S. Rajagopalan²⁹ , E. Ramakoti³⁷ , K. Ran^{14e,48} , N. P. Rapheeha^{33g} , H. Rasheed^{27b} , V. Raskina¹²⁷ , D. F. Rassloff^{63a} , S. Rave¹⁰⁰ , B. Ravina⁵⁵ , I. Ravinovich¹⁶⁹ , M. Raymond³⁶ , A. L. Read¹²⁵ , N. P. Readioff¹³⁹ , D. M. Rebuzzi^{73a,73b} , G. Redlinger²⁹ , A. S. Reed¹¹⁰ , K. Reeves²⁶ , J. A. Reidelsturz^{171,u} , D. Reikher¹⁵¹ , A. Rej¹⁴¹ , C. Rembser³⁶ , A. Renardi⁴⁸ , M. Renda^{27b} , M. B. Rendel¹¹⁰ , F. Renner⁴⁸ , A. G. Rennie⁵⁹ , S. Resconi^{71a} , M. Ressegotti^{57a,57b} , S. Rettie³⁶ , J. G. Reyes Rivera¹⁰⁷ , B. Reynolds¹¹⁹ , E. Reynolds^{17a} , O. L. Rezanova³⁷ , P. Reznicek¹³³ , N. Ribaric⁹¹ , E. Ricci^{78a,78b} , R. Richter¹¹⁰ , S. Richter^{47a,47b} , E. Richter-Was^{86b} , M. Ridel¹²⁷ , S. Ridouani^{35d} , P. Rieck¹¹⁷ , P. Riedler³⁶

, M. Rijssenbeek¹⁴⁵ , A. Rimoldi^{73a,73b} , M. Rimoldi⁴⁸ , L. Rinaldi^{23a,23b} , T. T. Rinn²⁹ , M. P. Rinnagel¹⁰⁹ , G. Ripellino¹⁶¹ , I. Riu¹³ , P. Rivadeneira⁴⁸ , J. C. Rivera Vergara¹⁶⁵ , F. Rizatdinova¹²¹ , E. Rizvi⁹⁴ , B. A. Roberts¹⁶⁷ , B. R. Roberts^{17a} , S. H. Robertson^{104,z} , M. Robin⁴⁸ , D. Robinson³² , C. M. Robles Gajardo^{137f} , M. Robles Manzano¹⁰⁰ , A. Robson⁵⁹ , A. Rocchi^{76a,76b} , C. Roda^{74a,74b} , S. Rodriguez Bosca^{63a} , Y. Rodriguez Garcia^{22a} , A. Rodriguez Rodriguez⁵⁴ , A. M. Rodríguez Vera^{156b} , S. Roe³⁶ , J. T. Roemer¹⁶⁰ , A. R. Roepe-Gier¹³⁶ , J. Roggel¹⁷¹ , O. Røhne¹²⁵ , R. A. Rojas¹⁰³ , C. P. A. Roland⁶⁸ , J. Roloff²⁹ , A. Romaniouk³⁷ , E. Romano^{73a,73b} , M. Romano^{23b} , A. C. Romero Hernandez¹⁶² , N. Rompotis⁹² , L. Roos¹²⁷ , S. Rosati^{75a} , B. J. Rosser³⁹ , E. Rossi¹²⁶ , E. Rossi^{72a,72b} , L. P. Rossi^{57b} , L. Rossini⁴⁸ , R. Rosten¹¹⁹ , M. Rotaru^{27b} , B. Rottler⁵⁴ , C. Rougier¹⁰² , D. Rousseau⁶⁶ , D. Rousso³² , A. Roy¹⁶² , S. Roy-Garand¹⁵⁵

, A. Rozanov¹⁰² , Y. Rozen¹⁵⁰ , X. Ruan^{33g} , A. Rubio Jimenez¹⁶³ , A. J. Ruby⁹² , V. H. Ruelas Rivera¹⁸ , T. A. Ruggeri¹ , A. Ruggiero¹²⁶ , A. Ruiz-Martinez¹⁶³ , A. Rummler³⁶ , Z. Rurikova⁵⁴ , N. A. Rusakovich³⁸ , H. L. Russell¹⁶⁵ , G. Russo^{75a,75b} , J. P. Rutherford⁷ , S. Rutherford Colmenares³² , K. Rybacki⁹¹ , M. Rybar¹³³ , E. B. Rye¹²⁵ , A. Ryzhov⁴⁴ , J. A. Sabater Iglesias⁵⁶ , P. Sabatini¹⁶³ , L. Sabetta^{75a,75b} , H.F.-W. Sadrozinski¹³⁶ , F. Safai Tehrani^{75a} , B. Safarzadeh Samani¹⁴⁶ , M. Safdari¹⁴³ , S. Saha¹⁶⁵ , M. Sahinsoy¹¹⁰ , M. Saimpert¹³⁵ , M. Saito¹⁵³ , T. Saito¹⁵³ , D. Salamani³⁶ , A. Salnikov¹⁴³ , J. Salt¹⁶³ , A. Salvador Salas¹³ , D. Salvatore^{43a,43b} , F. Salvatore¹⁴⁶ , A. Salzburger³⁶ , D. Sammel⁵⁴ , D. Sampsonidis^{152,e} , D. Sampsonidou¹²³ , J. Sánchez¹⁶³ , A. Sanchez Pineda⁴ , V. Sanchez Sebastian¹⁶³ , H. Sandaker¹²⁵ , C. O. Sander⁴⁸ , J. A. Sandesara¹⁰³ , M. Sandhoff¹⁷¹ , C. Sandoval^{22b} , D. P. C. Sankey¹³⁴ , T. Sano⁸⁸ , A. Sansoni⁵³ , L. Santi^{75a,75b}

, C. Santoni⁴⁰ , H. Santos^{130a,130b} , S. N. Santpur^{17a} , A. Santra¹⁶⁹ , K. A. Saoucha¹³⁹ , J. G. Saraiva^{130a,130d} , J. Sardain⁷ , O. Sasaki⁸⁴ , K. Sato¹⁵⁷ , C. Sauer^{63b} , F. Sauerburger⁵⁴ , E. Sauvan⁴ , P. Savard^{155,ah} , R. Sawada¹⁵³ , C. Sawyer¹³⁴ , L. Sawyer⁹⁷ , I. Sayago Galvan¹⁶³ , C. Sbarra^{23b} , A. Sbrizzi^{23a,23b} , T. Scanlon⁹⁶ , J. Schaarschmidt¹³⁸ , P. Schacht¹¹⁰ , D. Schaefer³⁹ , U. Schäfer¹⁰⁰ , A. C. Schaffer^{44,66} , D. Schaile¹⁰⁹ , R. D. Schamberger¹⁴⁵ , C. Scharf¹⁸ , M. M. Schefer¹⁹ , V. A. Schegelsky³⁷ , D. Scheirich¹³³ , F. Schenck¹⁸ , M. Schernau¹⁶⁰ , C. Scheulen⁵⁵ , C. Schiavi^{57a,57b} , E. J. Schioppa^{70a,70b} , M. Schioppa^{43a,43b} , B. Schlag¹⁴³ , K. E. Schleicher⁵⁴ , S. Schlenker³⁶ , J. Schmeing¹⁷¹ , M. A. Schmidt¹⁷¹ , K. Schmieden¹⁰⁰ , C. Schmitt¹⁰⁰ , S. Schmitt⁴⁸ , L. Schoeffel¹³⁵ , A. Schoening^{63b} , P. G. Scholer⁵⁴ , E. Schopf¹²⁶ , M. Schott¹⁰⁰ , J. Schovancova³⁶ , S. Schramm⁵⁶ , F. Schroeder¹⁷¹ , T. Schroer⁵⁶

, H. C. Schultz-Coulon^{63a} , M. Schumacher⁵⁴ , B. A. Schumm¹³⁶ , Ph. Schune¹³⁵ , A. J. Schuy¹³⁸ , H. R. Schwartz¹³⁶ , A. Schwartzman¹⁴³ , T. A. Schwarz¹⁰⁶ , Ph. Schwemling¹³⁵ , R. Schwienhorst¹⁰⁷ , A. Sciandra¹³⁶ , G. Sciolla²⁶ , F. Scuri^{74a} , C. D. Sebastiani⁹² , K. Sedlaczek¹¹⁵

J. Shlomi¹⁶⁹, M. J. Shochet³⁹, J. Shojaii¹⁰⁵, D. R. Shope¹²⁵, B. Shrestha¹²⁰, S. Shrestha^{119,ak}, E. M. Shrif^{33g}, M. J. Shroff¹⁶⁵, P. Sicho¹³¹, A. M. Sickles¹⁶², E. Sideras Haddad^{33g}, A. Sidoti^{23b}, F. Siegert⁵⁰, Dj. Sijacki¹⁵, R. Sikora^{86a}, F. Sili⁹⁰, J. M. Silva²⁰, M. V. Silva Oliveira²⁹, S. B. Silverstein^{47a}, S. Simion⁶⁶, R. Simioniello³⁶, E. L. Simpson⁵⁹, H. Simpson¹⁴⁶, L. R. Simpson¹⁰⁶, N. D. Simpson⁹⁸, S. Simsek⁸², S. Sindhu⁵⁵, P. Sinervo¹⁵⁵, S. Singh¹⁵⁵, S. Sinha⁴⁸, S. Sinha¹⁰¹, M. Sioli^{23a,23b}, I. Siral³⁶, E. Sitnikova⁴⁸, S. Yu. Sivoklov^{37,*}, J. Sjölin^{47a,47b}, A. Skaf⁵⁵, E. Skorda^{20,af}, P. Skubic¹²⁰, M. Slawinska⁸⁷, V. Smakhtin¹⁶⁹, B. H. Smart¹³⁴, J. Smiesko³⁶, S. Yu. Smirnov³⁷, Y. Smirnov³⁷, L. N. Smirnova^{37,a}, O. Smirnova⁹⁸, A. C. Smith⁴¹, E. A. Smith³⁹, H. A. Smith¹²⁶, J. L. Smith⁹², R. Smith¹⁴³, M. Smizanska⁹¹, K. Smolek¹³², A. A. Snesev³⁷, S. R. Snider¹⁵⁵, H. L. Snoek¹¹⁴, S. Snyder²⁹, R. Sobie^{165,z}, A. Soffer¹⁵¹, C. A. Solans Sanchez³⁶, E. Yu. Soldatov³⁷, U. Soldevila¹⁶³, A. A. Solodkov³⁷, S. Solomon²⁶, A. Soloshenko³⁸, K. Solovieva⁵⁴, O. V. Solovyanov⁴⁰, V. Solovyev³⁷, P. Sommer³⁶, A. Sonay¹³, W. Y. Song^{156b}, J. M. Sonneveld¹¹⁴, A. Sopczak¹³², A. L. Sopio⁹⁶, F. Sopkova^{28b}, V. Sothilingam^{63a}, S. Sottocornola⁶⁸, R. Soualah^{116b}, Z. Soumami^{35e}, D. South⁴⁸, S. Spagnolo^{70a,70b}, M. Spalla¹¹⁰, D. Sperlich⁵⁴, G. Spigo³⁶, M. Spina¹⁴⁶, S. Spinali⁹¹, D. P. Spiteri⁵⁹, M. Spousta¹³³, E. J. Staats³⁴, A. Stabile^{71a,71b}, R. Stamen^{63a}, M. Stamenkovic¹¹⁴, A. Stampekis²⁰, M. Standke²⁴, E. Stanecka⁸⁷, M. V. Stange⁵⁰, B. Stanislaus^{17a}, M. M. Stanitzki⁴⁸, B. Stapf⁴⁸, E. A. Starchenko³⁷, G. H. Stark¹³⁶, J. Stark¹⁰², D. M. Starke^{156b}, P. Staroba¹³¹, P. Starovoitov^{63a}, S. Stärz¹⁰⁴, R. Staszewski⁸⁷, G. Stavropoulos⁴⁶, J. Steentoft¹⁶¹, P. Steinberg²⁹, B. Stelzer^{142,156a}, H. J. Stelzer¹²⁹, O. Stelzer-Chilton^{156a}, H. Stenzel⁵⁸, T. J. Stevenson¹⁴⁶, G. A. Stewart³⁶, J. R. Stewart¹²¹, M. C. Stockton³⁶, G. Stoica^{27b}, M. Stolarski^{130a}, S. Stonjek¹¹⁰, A. Straessner⁵⁰, J. Strandberg¹⁴⁴, S. Strandberg^{47a,47b}, M. Strauss¹²⁰, T. Streblner¹⁰², P. Strizenec^{28b}, R. Ströhmer¹⁶⁶, D. M. Strom¹²³, L. R. Strom⁴⁸, R. Stroynowski⁴⁴, A. Strubig^{47a,47b}, S. A. Stucci²⁹, B. Stugu¹⁶, J. Stupak¹²⁰, N. A. Styles⁴⁸, D. Su¹⁴³, S. Su^{62a}, W. Su^{62d}, X. Su^{62a,66}, K. Sugizaki¹⁵³, V. V. Sulini³⁷, M. J. Sullivan⁹², D. M. S. Sultan^{78a,78b}, L. Sultanaliyeva³⁷, S. Sultansoy^{3b}, T. Sumida⁸⁸, S. Sun¹⁰⁶, S. Sun¹⁷⁰, O. Sunneborn Gudnadottir¹⁶¹, N. Sur¹⁰², M. R. Sutton¹⁴⁶, H. Suzuki¹⁵⁷, M. Svatos¹³¹, M. Swiatlowski^{156a}, T. Swirski¹⁶⁶, I. Sykora^{28a}, M. Sykora¹³³, T. Sykora¹³³, D. Ta¹⁰⁰, K. Tackmann^{48,x}, A. Taffard¹⁶⁰, R. Tafirout^{156a}, J. S. Tafuya Vargas⁶⁶, E. P. Takeva⁵², Y. Takubo⁸⁴, M. Talby¹⁰², A. A. Talyshv³⁷, K. C. Tam^{64b}, N. M. Tamir¹⁵¹, A. Tanaka¹⁵³, J. Tanaka¹⁵³, R. Tanaka⁶⁶, M. Tanasini^{57a,57b}, Z. Tao¹⁶⁴, S. Tapia Araya^{137f}, S. Tapprogge¹⁰⁰, A. Tarek Abouelfadl Mohamed¹⁰⁷, S. Tarem¹⁵⁰, K. Tariq^{14a}, G. Tarna^{27b,102}, G. F. Tartarelli^{71a}, P. Tas¹³³, M. Tasevsky¹³¹, E. Tassi^{43a,43b}, A. C. Tate¹⁶², G. Tateno¹⁵³, Y. Tayalati^{35e,y}, G. N. Taylor¹⁰⁵, W. Taylor^{156b}, H. Teagle⁹², A. S. Tee¹⁷⁰, R. Teixeira De Lima¹⁴³, P. Teixeira-Dias⁹⁵, J. J. Teoh¹⁵⁵, K. Terashi¹⁵³, J. Terron⁹⁹, S. Terzo¹³, M. Testa⁵³, R. J. Teuscher^{155,z}, A. Thaler⁷⁹, O. Theiner⁵⁶, N. Themistokleous⁵², T. Theveneaux-Pelzer¹⁰², O. Thielmann¹⁷¹, D. W. Thomas⁹⁵, J. P. Thomas²⁰, E. A. Thompson^{17a}, P. D. Thompson²⁰, E. Thomson¹²⁸, Y. Tian⁵⁵, V. Tikhomirov^{37,a}, Yu. A. Tikhonov³⁷, S. Timoshenko³⁷, D. Timoshyn¹³³, E. X. L. Ting¹, P. Tipton¹⁷², S. H. Tlou^{33g}, A. Tmourji⁴⁰, K. Todome^{23a,23b}, S. Todorova-Nova¹³³, S. Todt⁵⁰, M. Togawa⁸⁴, J. Tojo⁸⁹, S. Tokár^{28a}, K. Tokushuku⁸⁴, O. Toldaiev⁶⁸, R. Tombs³², M. Tomoto^{84,111}, L. Tompkins¹⁴³, K. W. Topolnicki^{86b}, E. Torrence¹²³, H. Torres¹⁰², E. Torró Pastor¹⁶³, M. Toscani³⁰, C. Toscirri³⁹, M. Tost¹¹, D. R. Tovey¹³⁹, A. Traeet¹⁶, I. S. Trandafir^{27b}, T. Trefzger¹⁶⁶, A. Tricoli²⁹, I. M. Trigger^{156a}, S. Trincz-Duvold¹²⁷, D. A. Trischuk²⁶, B. Trocmé⁶⁰, C. Troncon^{71a}, L. Truong^{33c}, M. Trzebinski⁸⁷, A. Trzupek⁸⁷, F. Tsai¹⁴⁵, M. Tsai¹⁰⁶, A. Tsiamis^{152,e}, P. V. Tsiarshka³⁷, S. Tsigaridas^{156a}, A. Tsigotis^{152,y}, V. Tsiskaridze¹⁵⁵, E. G. Tskhadadze^{149a}, M. Tsopoulou^{152,e}, Y. Tsujikawa⁸⁸, I. I. Tsukerman³⁷, V. Tsulaia^{17a}, S. Tsuno⁸⁴, O. Tsur¹⁵⁰, K. Tsurii¹¹⁸, D. Tsybychev¹⁴⁵, Y. Tu^{64b}, A. Tudorache^{27b}, V. Tudorache^{27b}, A. N. Tuna³⁶, S. Turchikhin³⁸, I. Turk Cakir^{3a}, R. Turra^{71a}, T. Turtuvshin^{38,aa}, P. M. Tuts⁴¹, S. Tzamarias^{152,e}, P. Tzanis¹⁰, E. Tzovara¹⁰⁰, K. Uchida¹⁵³, F. Ukegawa¹⁵⁷, P. A. Ulloa Poblete^{137c,137b}, E. N. Umaka²⁹, G. Unal³⁶, M. Unal¹¹, A. Undrus²⁹, G. Unel¹⁶⁰, J. Urban^{28b}, P. Urquijo¹⁰⁵, G. Usai⁸, R. Ushioda¹⁵⁴, M. Usman¹⁰⁸, Z. Uysal^{21b}, L. Vacavant¹⁰², V. Vacek¹³², B. Vachon¹⁰⁴, K. O. H. Vadla¹²⁵, T. Vafeiadis³⁶, A. Vaitkus⁹⁶, C. Valderanis¹⁰⁹, E. Valdes Santurio^{47a,47b}, M. Valente^{156a}, S. Valentinetti^{23a,23b}, A. Valero¹⁶³, E. Valiente Moreno¹⁶³, A. Vallier¹⁰², J. A. Valls Ferrer¹⁶³, D. R. Van Arneman¹¹⁴, T. R. Van Daalen¹³⁸, A. Van Der Graaf⁴⁹, P. Van Gemmeren⁶, M. Van Rijnbach^{36,125}, S. Van Stroud⁹⁶, I. Van Vulpen¹¹⁴, M. Vanadia^{76a,76b}, W. Vandelli³⁶, M. Vandenbroucke¹³⁵, E. R. Vandewall¹²¹, D. Vannicola¹⁵¹, L. Vannoli^{57a,57b}, R. Vari^{75a}, E. W. Varnes⁷, C. Varni^{17b}, T. Varol¹⁴⁸, D. Varouchas⁶⁶, L. Varriale¹⁶³, K. E. Varvell¹⁴⁷, M. E. Vasile^{27b}, L. Vaslin⁴⁰, G. A. Vasquez¹⁶⁵, F. Vazeille⁴⁰, T. Vazquez Schroeder³⁶, J. Veatch³¹, V. Vecchio¹⁰¹, M. J. Veen¹⁰³, I. Veliscek¹²⁶, L. M. Veloce¹⁵⁵

F. Veloso^{130a,130c} , S. Veneziano^{75a} , A. Ventura^{70a,70b} , A. Verbitskiy¹¹⁰ , M. Verducci^{74a,74b} , C. Vergis²⁴ , M. Verissimo De Araujo^{83b} , W. Verkerke¹¹⁴ , J. C. Vermeulen¹¹⁴ , C. Vernieri¹⁴³ , M. Vessella¹⁰³ , M. C. Vetterli^{142,ah} , A. Vgenopoulos^{152,e} , N. Viaux Maira^{137f} , T. Vickey¹³⁹ , O. E. Vickey Boeriu¹³⁹ , G. H. A. Viehhauser¹²⁶ , L. Vigani^{63b} , M. Villa^{23a,23b} , M. Villaplana Perez¹⁶³ , E. M. Villhauer⁵² , E. Vilucchi⁵³ , M. G. Vincter³⁴ , G. S. Virdee²⁰ , A. Vishwakarma⁵² , A. Visibile¹¹⁴ , C. Vittori³⁶ , I. Vivarelli¹⁴⁶ , V. Vladimirov¹⁶⁷ , E. Voevodina¹¹⁰ , F. Vogel¹⁰⁹ , P. Vokac¹³² , J. Von Ahnen⁴⁸ , E. Von Toerne²⁴ , B. Vormwald³⁶ , V. Vorobel¹³³ , K. Vorobev³⁷ , M. Vos¹⁶³ , K. Voss¹⁴¹ , J. H. Vossebeld⁹² , M. Vozak¹¹⁴ , L. Vozdecky⁹⁴ , N. Vranjes¹⁵ , M. Vranjes Milosavljevic¹⁵ , M. Vreeswijk¹¹⁴ , N. K. Vu^{62d,62c} , R. Vuillermet³⁶ , O. Vujanovic¹⁰⁰ , I. Vukotic³⁹ , S. Wada¹⁵⁷ , C. Wagner¹⁰³ , J. M. Wagner^{17a} , W. Wagner¹⁷¹ , S. Wahdan¹⁷¹

, H. Wahlberg⁹⁰ , R. Wakasa¹⁵⁷ , M. Wakida¹¹¹ , J. Walder¹³⁴ , R. Walker¹⁰⁹ , W. Walkowiak¹⁴¹ , A. Wall¹²⁸ , T. Wamorkar⁶ , A. Z. Wang¹⁷⁰ , C. Wang¹⁰⁰ , C. Wang^{62c} , H. Wang^{17a} , J. Wang^{64a} , R.-J. Wang¹⁰⁰ , R. Wang⁶¹ , R. Wang⁶ , S. M. Wang¹⁴⁸ , S. Wang^{62b} , T. Wang^{62a} , W. T. Wang⁸⁰ , X. Wang^{14c} , X. Wang¹⁶² , X. Wang^{62c} , Y. Wang^{62d} , Y. Wang^{14c} , Z. Wang¹⁰⁶ , Z. Wang^{51,62c,62d} , Z. Wang¹⁰⁶ , A. Warburton¹⁰⁴ , R. J. Ward²⁰ , N. Warrack⁵⁹ , A. T. Watson²⁰ , H. Watson⁵⁹ , M. F. Watson²⁰ , E. Watton^{59,134} , G. Watts¹³⁸ , B. M. Waugh⁹⁶ , C. Weber²⁹ , H. A. Weber¹⁸ , M. S. Weber¹⁹ , S. M. Weber^{63a} , C. Wei^{62a} , Y. Wei¹²⁶ , A. R. Weidberg¹²⁶ , E. J. Weik¹¹⁷ , J. Weingarten⁴⁹ , M. Weirich¹⁰⁰ , C. Weiser⁵⁴ , C. J. Wells⁴⁸ , T. Wenaus²⁹ , B. Wendland⁴⁹ , T. Wengler³⁶ , N. S. Wenke¹¹⁰ , N. Wermes²⁴ , M. Wessels^{63a}

, K. Whalen¹²³ , A. M. Wharton⁹¹ , A. S. White⁶¹ , A. White⁸ , M. J. White¹ , D. Whiteson¹⁶⁰ , L. Wickremasinghe¹²⁴ , W. Wiedenmann¹⁷⁰ , C. Wiel⁵⁰ , M. Wielers¹³⁴ , C. Wiglesworth⁴² , D. J. Wilbern¹²⁰ , H. G. Wilkens³⁶ , D. M. Williams⁴¹ , H. H. Williams¹²⁸ , S. Williams³² , S. Willocq¹⁰³ , B. J. Wilson¹⁰¹ , P. J. Windischhofer³⁹ , F. I. Winkel³⁰ , F. Winklmeier¹²³ , B. T. Winter⁵⁴ , J. K. Winter¹⁰¹ , M. Wittgen¹⁴³ , M. Wobisch⁹⁷ , Z. Wolfs¹¹⁴ , R. Wölker¹²⁶ , J. Wollrath¹⁶⁰ , M. W. Wolter⁸⁷ , H. Wolters^{130a,130c} , A. F. Wongel⁴⁸ , S. D. Worm⁴⁸ , B. K. Wosiek⁸⁷ , K. W. Woźniak⁸⁷ , S. Wozniowski⁵⁵ , K. Wraight⁵⁹ , C. Wu²⁰ , J. Wu^{14a,14e} , M. Wu^{64a} , M. Wu¹¹³ , S. L. Wu¹⁷⁰ , X. Wu⁵⁶ , Y. Wu^{62a} , Z. Wu¹³⁵ , J. Wuerzinger¹¹⁰ , T. R. Wyatt¹⁰¹ , B. M. Wynne⁵² , S. Xella⁴² , L. Xia^{14c} , M. Xia^{14b} , J. Xiang^{64c} , X. Xiao¹⁰⁶ , M. Xie^{62a} , X. Xie^{62a} , S. Xin^{14a,14e}

, J. Xiong^{17a} , D. Xu^{14a} , H. Xu^{62a} , L. Xu^{62a} , R. Xu¹²⁸ , T. Xu¹⁰⁶ , Y. Xu^{14b} , Z. Xu⁵² , Z. Xu^{14a} , B. Yabsley¹⁴⁷ , S. Yacoub^{33a} , N. Yamaguchi⁸⁹ , Y. Yamaguchi¹⁵⁴ , E. Yamashita¹⁵³ , H. Yamauchi¹⁵⁷ , T. Yamazaki^{17a} , Y. Yamazaki⁸⁵ , J. Yan^{62c} , S. Yan¹²⁶ , Z. Yan²⁵ , H. J. Yang^{62c,62d} , H. T. Yang^{62a} , S. Yang^{62a} , T. Yang^{64c} , X. Yang^{62a} , X. Yang^{14a} , Y. Yang⁴⁴ , Y. Yang^{62a} , Z. Yang^{62a} , W.-M. Yao^{17a} , Y. C. Yap⁴⁸ , H. Ye^{14c} , H. Ye⁵⁵ , J. Ye⁴⁴ , S. Ye²⁹ , X. Ye^{62a} , Y. Yeh⁹⁶ , I. Yeletskikh³⁸ , B. K. Yeo^{17b} , M. R. Yexley⁹⁶ , P. Yin⁴¹ , K. Yorita¹⁶⁸ , S. Younas^{27b} , C. J. S. Young³⁶ , C. Young¹⁴³ , Y. Yu^{62a} , M. Yuan¹⁰⁶ , R. Yuan^{62b,1} , L. Yue⁹⁶ , M. Zaazoua^{62a} , B. Zabinski⁸⁷ , E. Zaid⁵² , T. Zakareishvili^{149b} , N. Zakharchuk³⁴ , S. Zambito⁵⁶

, J. A. Zamora Saa^{137d,137b} , J. Zang¹⁵³ , D. Zanzi⁵⁴ , O. Zaplatilek¹³² , C. Zeitnitz¹⁷¹ , H. Zeng^{14a} , J. C. Zeng¹⁶² , D. T. Zenger Jr²⁶ , O. Zenin³⁷ , T. Ženiš^{28a} , S. Zenz⁹⁴ , S. Zerradi^{35a} , D. Zerwas⁶⁶ , M. Zhai^{14a,14e} , B. Zhang^{14c} , D. F. Zhang¹³⁹ , J. Zhang^{62b} , J. Zhang⁶ , K. Zhang^{14a,14c} , L. Zhang^{14c} , P. Zhang^{14a,14e} , R. Zhang¹⁷⁰ , S. Zhang¹⁰⁶ , T. Zhang¹⁵³ , X. Zhang^{62c} , X. Zhang^{62b} , Y. Zhang^{5,62c} , Y. Zhang⁹⁶ , Y. Zhang^{62a} , Z. Zhang^{17a} , Z. Zhang⁶⁶ , H. Zhao¹³⁸ , P. Zhao⁵¹ , T. Zhao^{62b} , Y. Zhao¹³⁶ , Z. Zhao^{62a} , A. Zhemchugov³⁸ , K. Zheng¹⁶² , X. Zheng^{62a} , Z. Zheng¹⁴³ , D. Zhong¹⁶² , B. Zhou¹⁰⁶ , H. Zhou⁷ , N. Zhou^{62c} , Y. Zhou⁷ , C. G. Zhu^{62b} , J. Zhu¹⁰⁶ , Y. Zhu^{62c} , Y. Zhu^{62a} , X. Zhuang^{14a} , K. Zhukov³⁷ , V. Zhulanov³⁷ , N. I. Zimine³⁸ , J. Zinsser^{63b} , M. Ziolkowski¹⁴¹

, L. Živković¹⁵ , A. Zoccoli^{23a,23b} , K. Zoch⁵⁶ , T. G. Zorbass¹³⁹ , O. Zormpa⁴⁶ , W. Zou⁴¹ , L. Zwalinski³⁶ 

¹ Department of Physics, University of Adelaide, Adelaide, Australia

² Department of Physics, University of Alberta, Edmonton, AB, Canada

³ (a) Department of Physics, Ankara University, Ankara, Türkiye; (b) Division of Physics, TOBB University of Economics and Technology, Ankara, Türkiye

⁴ LAPP, Univ. Savoie Mont Blanc, CNRS/IN2P3, Annecy, France

⁵ APC, Université Paris Cité, CNRS/IN2P3, Paris, France

⁶ High Energy Physics Division, Argonne National Laboratory, Argonne, IL, USA

- ¹² Institute of Physics, Azerbaijan Academy of Sciences, Baku, Azerbaijan
- ¹³ Institut de Física d'Altes Energies (IFAE), Barcelona Institute of Science and Technology, Barcelona, Spain
- ¹⁴ (a) Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China; (b) Physics Department, Tsinghua University, Beijing, China; (c) Department of Physics, Nanjing University, Nanjing, China; (d) School of Science, Shenzhen Campus of Sun Yat-sen University, Shenzhen, China; (e) University of Chinese Academy of Science (UCAS), Beijing, China
- ¹⁵ Institute of Physics, University of Belgrade, Belgrade, Serbia
- ¹⁶ Department for Physics and Technology, University of Bergen, Bergen, Norway
- ¹⁷ (a) Physics Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA; (b) University of California, Berkeley, CA, USA
- ¹⁸ Institut für Physik, Humboldt Universität zu Berlin, Berlin, Germany
- ¹⁹ Albert Einstein Center for Fundamental Physics and Laboratory for High Energy Physics, University of Bern, Bern, Switzerland
- ²⁰ School of Physics and Astronomy, University of Birmingham, Birmingham, UK
- ²¹ (a) Department of Physics, Bogazici University, Istanbul, Türkiye; (b) Department of Physics Engineering, Gaziantep University, Gaziantep, Türkiye; (c) Department of Physics, Istanbul University, Istanbul, Türkiye
- ²² (a) Facultad de Ciencias y Centro de Investigaciones, Universidad Antonio Nariño, Bogotá, Colombia; (b) Departamento de Física, Universidad Nacional de Colombia, Bogotá, Colombia; (c) Pontificia Universidad Javeriana, Bogotá, Colombia
- ²³ (a) Dipartimento di Fisica e Astronomia A. Righi, Università di Bologna, Bologna, Italy; (b) INFN Sezione di Bologna, Bologna, Italy
- ²⁴ Physikalisches Institut, Universität Bonn, Bonn, Germany
- ²⁵ Department of Physics, Boston University, Boston, MA, USA
- ²⁶ Department of Physics, Brandeis University, Waltham, MA, USA
- ²⁷ (a) Transilvania University of Brasov, Brasov, Romania; (b) Horia Hulubei National Institute of Physics and Nuclear Engineering, Bucharest, Romania; (c) Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania; (d) National Institute for Research and Development of Isotopic and Molecular Technologies, Physics Department, Cluj-Napoca, Romania; (e) University Politehnica Bucharest, Bucharest, Romania; (f) West University in Timisoara, Timisoara, Romania; (g) Faculty of Physics, University of Bucharest, Bucharest, Romania
- ²⁸ (a) Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovakia; (b) Department of Subnuclear Physics, Institute of Experimental Physics of the Slovak Academy of Sciences, Kosice, Slovak Republic
- ²⁹ Physics Department, Brookhaven National Laboratory, Upton, NY, USA
- ³⁰ Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Departamento de Física, y CONICET, Instituto de Física de Buenos Aires (IFIBA), Buenos Aires, Argentina
- ³¹ California State University, Long Beach, CA, USA
- ³² Cavendish Laboratory, University of Cambridge, Cambridge, UK
- ³³ (a) Department of Physics, University of Cape Town, Cape Town, South Africa; (b) iThemba Labs, Western Cape, South Africa; (c) Department of Mechanical Engineering Science, University of Johannesburg, Johannesburg, South Africa; (d) National Institute of Physics, University of the Philippines Diliman (Philippines), Quezon City, Philippines; (e) University of South Africa, Department of Physics, Pretoria, South Africa; (f) University of Zululand, KwaDlangezwa, South Africa; (g) School of Physics, University of the Witwatersrand, Johannesburg, South Africa
- ³⁴ Department of Physics, Carleton University, Ottawa, ON, Canada
- ³⁵ (a) Faculté des Sciences Ain Chock, Réseau Universitaire de Physique des Hautes Energies-Université Hassan II, Casablanca, Morocco; (b) Faculté des Sciences, Université Ibn-Tofail, Kénitra, Slovakia; (c) Faculté des Sciences Semlalia, Université Cadi Ayyad, LPHEA-Marrakech, Marrakech, Morocco; (d) LPMR, Faculté des Sciences, Université Mohamed Premier, Oujda, Morocco; (e) Faculté des sciences, Université Mohammed V, Rabat, Morocco; (f) Institute of Applied Physics, Mohammed VI Polytechnic University, Ben Guerir, Morocco
- ³⁶ CERN, Geneva, Switzerland
- ³⁷ Affiliated with an institute covered by a cooperation agreement with CERN, Geneva, Switzerland
- ³⁸ Affiliated with an international laboratory covered by a cooperation agreement with CERN, Geneva, Switzerland
- ³⁹ Enrico Fermi Institute, University of Chicago, Chicago, IL, USA
- ⁴⁰ LPC, Université Clermont Auvergne, CNRS/IN2P3, Clermont-Ferrand, France
- ⁴¹ Nevis Laboratory, Columbia University, Irvington, NY, USA
- ⁴² Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark

- 43 (a)Dipartimento di Fisica, Università della Calabria, Rende, Italy; (b)INFN Gruppo Collegato di Cosenza, Laboratori Nazionali di Frascati, Frascati, Italy
- 44 Physics Department, Southern Methodist University, Dallas, TX, USA
- 45 Physics Department, University of Texas at Dallas, Richardson, TX, USA
- 46 National Centre for Scientific Research “Demokritos”, Agia Paraskevi, Greece
- 47 (a)Department of Physics, Stockholm University, Stockholm, Sweden; (b)Oskar Klein Centre, Stockholm, Sweden
- 48 Deutsches Elektronen-Synchrotron DESY, Hamburg and Zeuthen, Germany
- 49 Fakultät Physik , Technische Universität Dortmund, Dortmund, Germany
- 50 Institut für Kern- und Teilchenphysik, Technische Universität Dresden, Dresden, Germany
- 51 Department of Physics, Duke University, Durham, NC, USA
- 52 SUPA-School of Physics and Astronomy, University of Edinburgh, Edinburgh, UK
- 53 INFN e Laboratori Nazionali di Frascati, Frascati, Italy
- 54 Physikalisches Institut, Albert-Ludwigs-Universität Freiburg, Freiburg, Germany
- 55 II. Physikalisches Institut, Georg-August-Universität Göttingen, Göttingen, Germany
- 56 Département de Physique Nucléaire et Corpusculaire, Université de Genève, Geneva, Switzerland
- 57 (a)Dipartimento di Fisica, Università di Genova, Genoa, Italy; (b)INFN Sezione di Genova, Genoa, Italy
- 58 II. Physikalisches Institut, Justus-Liebig-Universität Giessen, Giessen, Germany
- 59 SUPA-School of Physics and Astronomy, University of Glasgow, Glasgow, UK
- 60 LPSC, Université Grenoble Alpes, CNRS/IN2P3, Grenoble INP, Grenoble, France
- 61 Laboratory for Particle Physics and Cosmology, Harvard University, Cambridge, MA, USA
- 62 (a)Department of Modern Physics and State Key Laboratory of Particle Detection and Electronics, University of Science and Technology of China, Hefei, China; (b)Institute of Frontier and Interdisciplinary Science and Key Laboratory of Particle Physics and Particle Irradiation (MOE), Shandong University, Qingdao, China; (c)School of Physics and Astronomy, Shanghai Jiao Tong University, Key Laboratory for Particle Astrophysics and Cosmology (MOE), SKLPPC, Shanghai, China; (d)Tsung-Dao Lee Institute, Shanghai, China
- 63 (a)Kirchhoff-Institut für Physik, Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany; (b)Physikalisches Institut, Ruprecht-Karls-Universität Heidelberg, Heidelberg, Germany
- 64 (a)Department of Physics, Chinese University of Hong Kong, Shatin, NT, Hong Kong; (b)Department of Physics, University of Hong Kong, Hong Kong, China; (c)Department of Physics and Institute for Advanced Study, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China
- 65 Department of Physics, National Tsing Hua University, Hsinchu, Taiwan
- 66 IJCLab, Université Paris-Saclay, CNRS/IN2P3, 91405, Orsay, France
- 67 Centro Nacional de Microelectrónica (IMB-CNM-CSIC), Barcelona, Spain
- 68 Department of Physics, Indiana University, Bloomington, IN, USA
- 69 (a)INFN Gruppo Collegato di Udine, Sezione di Trieste, Udine, Italy; (b)ICTP, Trieste, Italy; (c)Dipartimento Politecnico di Ingegneria e Architettura, Università di Udine, Udine, Italy
- 70 (a)INFN Sezione di Lecce, Lecce, Italy; (b)Dipartimento di Matematica e Fisica, Università del Salento, Lecce, Italy
- 71 (a)INFN Sezione di Milano, Milan, Italy; (b)Dipartimento di Fisica, Università di Milano, Milan, Italy
- 72 (a)INFN Sezione di Napoli, Naples, Italy; (b)Dipartimento di Fisica, Università di Napoli, Naples, Italy
- 73 (a)INFN Sezione di Pavia, Pavia, Italy; (b)Dipartimento di Fisica, Università di Pavia, Pavia, Italy
- 74 (a)INFN Sezione di Pisa, Pisa, Italy; (b)Dipartimento di Fisica E. Fermi, Università di Pisa, Pisa, Italy
- 75 (a)INFN Sezione di Roma, Rome, Italy; (b)Dipartimento di Fisica, Sapienza Università di Roma, Rome, Italy
- 76 (a)INFN Sezione di Roma Tor Vergata, Rome, Italy; (b)Dipartimento di Fisica, Università di Roma Tor Vergata, Rome, Italy
- 77 (a)INFN Sezione di Roma Tre, Rome, Italy; (b)Dipartimento di Matematica e Fisica, Università Roma Tre, Rome, Italy
- 78 (a)INFN-TIFPA, Povo, Italy; (b)Università degli Studi di Trento, Trento, Italy
- 79 Universität Innsbruck, Department of Astro and Particle Physics, Innsbruck, Austria
- 80 University of Iowa, Iowa City, IA, USA
- 81 Department of Physics and Astronomy, Iowa State University, Ames, IA, USA
- 82 Istinye University, Sariyer, Istanbul, Türkiye
- 83 (a)Departamento de Engenharia Elétrica, Universidade Federal de Juiz de Fora (UFJF), Juiz de Fora, Brazil; (b)Universidade Federal do Rio De Janeiro COPPE/EE/IF, Rio de Janeiro, Brazil; (c)Instituto de Física, Universidade de São Paulo, São Paulo, Brazil; (d)Rio de Janeiro State University, Rio de Janeiro, Brazil

- 84 KEK, High Energy Accelerator Research Organization, Tsukuba, Japan
- 85 Graduate School of Science, Kobe University, Kobe, Japan
- 86 (a) AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Krakow, Poland; (b) Marian Smoluchowski Institute of Physics, Jagiellonian University, Krakow, Poland
- 87 Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Poland
- 88 Faculty of Science, Kyoto University, Kyoto, Japan
- 89 Research Center for Advanced Particle Physics and Department of Physics, Kyushu University, Fukuoka, Japan
- 90 Instituto de Física La Plata, Universidad Nacional de La Plata and CONICET, La Plata, Argentina
- 91 Physics Department, Lancaster University, Lancaster, UK
- 92 Oliver Lodge Laboratory, University of Liverpool, Liverpool, UK
- 93 Department of Experimental Particle Physics, Jožef Stefan Institute and Department of Physics, University of Ljubljana, Ljubljana, Slovenia
- 94 School of Physics and Astronomy, Queen Mary University of London, London, UK
- 95 Department of Physics, Royal Holloway University of London, Egham, UK
- 96 Department of Physics and Astronomy, University College London, London, UK
- 97 Louisiana Tech University, Ruston, LA, USA
- 98 Fysiska institutionen, Lunds universitet, Lund, Sweden
- 99 Departamento de Física Teórica C-15 and CIAFF, Universidad Autónoma de Madrid, Madrid, Spain
- 100 Institut für Physik, Universität Mainz, Mainz, Germany
- 101 School of Physics and Astronomy, University of Manchester, Manchester, UK
- 102 CPPM, Aix-Marseille Université, CNRS/IN2P3, Marseille, France
- 103 Department of Physics, University of Massachusetts, Amherst, MA, USA
- 104 Department of Physics, McGill University, Montreal, QC, Canada
- 105 School of Physics, University of Melbourne, Parkville, VIC, Australia
- 106 Department of Physics, University of Michigan, Ann Arbor, MI, USA
- 107 Department of Physics and Astronomy, Michigan State University, East Lansing, MI, USA
- 108 Group of Particle Physics, University of Montreal, Montreal, QC, Canada
- 109 Fakultät für Physik, Ludwig-Maximilians-Universität München, Munich, Germany
- 110 Max-Planck-Institut für Physik (Werner-Heisenberg-Institut), Munich, Germany
- 111 Graduate School of Science and Kobayashi-Maskawa Institute, Nagoya University, Nagoya, Japan
- 112 Department of Physics and Astronomy, University of New Mexico, Albuquerque, NM, USA
- 113 Institute for Mathematics, Astrophysics and Particle Physics, Radboud University/Nikhef, Nijmegen, The Netherlands
- 114 Nikhef National Institute for Subatomic Physics and University of Amsterdam, Amsterdam, The Netherlands
- 115 Department of Physics, Northern Illinois University, DeKalb, IL, USA
- 116 (a) New York University Abu Dhabi, Abu Dhabi, United Arab Emirates; (b) University of Sharjah, Sharjah, United Arab Emirates
- 117 Department of Physics, New York University, New York, NY, USA
- 118 Ochanomizu University, Otsuka, Bunkyo-ku, Tokyo, Japan
- 119 Ohio State University, Columbus, OH, USA
- 120 Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman, OK, USA
- 121 Department of Physics, Oklahoma State University, Stillwater, OK, USA
- 122 Palacký University, Joint Laboratory of Optics, Olomouc, Czech Republic
- 123 Institute for Fundamental Science, University of Oregon, Eugene, OR, USA
- 124 Graduate School of Science, Osaka University, Osaka, Japan
- 125 Department of Physics, University of Oslo, Oslo, Norway
- 126 Department of Physics, Oxford University, Oxford, UK
- 127 LPNHE, Sorbonne Université, Université Paris Cité, CNRS/IN2P3, Paris, France
- 128 Department of Physics, University of Pennsylvania, Philadelphia, PA, USA
- 129 Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA, USA
- 130 (a) Laboratório de Instrumentação e Física Experimental de Partículas-LIP, Lisbon, Portugal; (b) Departamento de Física, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal; (c) Departamento de Física, Universidade de Coimbra, Coimbra, Portugal; (d) Centro de Física Nuclear da Universidade de Lisboa, Lisbon, Portugal; (e) Departamento de Física,

- Universidade do Minho, Braga, Portugal; ^(f)Departamento de Física Teórica y del Cosmos, Universidad de Granada, Granada, Spain; ^(g)Departamento de Física, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal
- 131 Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic
- 132 Czech Technical University in Prague, Prague, Czech Republic
- 133 Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic
- 134 Particle Physics Department, Rutherford Appleton Laboratory, Didcot, UK
- 135 IRFU, CEA, Université Paris-Saclay, Gif-sur-Yvette, France
- 136 Santa Cruz Institute for Particle Physics, University of California Santa Cruz, Santa Cruz, CA, USA
- 137 ^(a)Departamento de Física, Pontificia Universidad Católica de Chile, Santiago, Chile; ^(b)Millennium Institute for Subatomic physics at high energy frontier (SAPHIR), Santiago, Chile; ^(c)Instituto de Investigación Multidisciplinario en Ciencia y Tecnología, y Departamento de Física, Universidad de La Serena, La Serena, Chile; ^(d)Universidad Andres Bello, Department of Physics, Santiago, Chile; ^(e)Instituto de Alta Investigación, Universidad de Tarapacá, Arica, Chile; ^(f)Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile
- 138 Department of Physics, University of Washington, Seattle, WA, USA
- 139 Department of Physics and Astronomy, University of Sheffield, Sheffield, UK
- 140 Department of Physics, Shinshu University, Nagano, Japan
- 141 Department Physik, Universität Siegen, Siegen, Germany
- 142 Department of Physics, Simon Fraser University, Burnaby, BC, Canada
- 143 SLAC National Accelerator Laboratory, Stanford, CA, USA
- 144 Department of Physics, Royal Institute of Technology, Stockholm, Sweden
- 145 Departments of Physics and Astronomy, Stony Brook University, Stony Brook, NY, USA
- 146 Department of Physics and Astronomy, University of Sussex, Brighton, UK
- 147 School of Physics, University of Sydney, Sydney, Australia
- 148 Institute of Physics, Academia Sinica, Taipei, Taiwan
- 149 ^(a)E. Andronikashvili Institute of Physics, Iv. Javakhishvili Tbilisi State University, Tbilisi, Georgia; ^(b)High Energy Physics Institute, Tbilisi State University, Tbilisi, Georgia; ^(c)University of Georgia, Tbilisi, Georgia
- 150 Department of Physics, Technion, Israel Institute of Technology, Haifa, Israel
- 151 Raymond and Beverly Sackler School of Physics and Astronomy, Tel Aviv University, Tel Aviv, Israel
- 152 Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece
- 153 International Center for Elementary Particle Physics and Department of Physics, University of Tokyo, Tokyo, Japan
- 154 Department of Physics, Tokyo Institute of Technology, Tokyo, Japan
- 155 Department of Physics, University of Toronto, Toronto, ON, Canada
- 156 ^(a)TRIUMF, Vancouver, BC, Canada; ^(b)Department of Physics and Astronomy, York University, Toronto, ON, Canada
- 157 Division of Physics and Tomonaga Center for the History of the Universe, Faculty of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan
- 158 Department of Physics and Astronomy, Tufts University, Medford, MA, USA
- 159 United Arab Emirates University, Al Ain, United Arab Emirates
- 160 Department of Physics and Astronomy, University of California Irvine, Irvine, CA, USA
- 161 Department of Physics and Astronomy, University of Uppsala, Uppsala, Sweden
- 162 Department of Physics, University of Illinois, Urbana, IL, USA
- 163 Instituto de Física Corpuscular (IFIC), Centro Mixto Universidad de Valencia - CSIC, Valencia, Spain
- 164 Department of Physics, University of British Columbia, Vancouver, BC, Canada
- 165 Department of Physics and Astronomy, University of Victoria, Victoria, BC, Canada
- 166 Fakultät für Physik und Astronomie, Julius-Maximilians-Universität Würzburg, Würzburg, Germany
- 167 Department of Physics, University of Warwick, Coventry, UK
- 168 Waseda University, Tokyo, Japan
- 169 Department of Particle Physics and Astrophysics, Weizmann Institute of Science, Rehovot, Israel
- 170 Department of Physics, University of Wisconsin, Madison, WI, USA
- 171 Fakultät für Mathematik und Naturwissenschaften, Fachgruppe Physik, Bergische Universität Wuppertal, Wuppertal, Germany
- 172 Department of Physics, Yale University, New Haven, CT, USA

^a Also Affiliated with an Institute Covered by a Cooperation Agreement with CERN, Geneva, Switzerland

- ^b Also at APC, Université Paris Cité, CNRS/IN2P3, Paris, France
- ^c Also at Borough of Manhattan Community College, City University of New York, New York, NY, USA
- ^d Also at Center for High Energy Physics, Peking University, China
- ^e Also at Center for Interdisciplinary Research and Innovation (CIRI-AUTH), Thessaloniki, Greece
- ^f Also at Centro Studi e Ricerche Enrico Fermi, Rome, Italy
- ^g Associated at CERN, Geneva, Switzerland
- ^h Also at CERN, Geneva, Switzerland
- ⁱ Also at Département de Physique Nucléaire et Corpusculaire, Université de Genève, Geneva, Switzerland
- ^j Also at Departament de Física de la Universitat Autònoma de Barcelona, Barcelona, Spain
- ^k Also at Department of Financial and Management Engineering, University of the Aegean, Chios, Greece
- ^l Also at Department of Physics and Astronomy, Michigan State University, East Lansing, MI, USA
- ^m Also at Department of Physics and Astronomy, University of Sheffield, Sheffield, UK
- ⁿ Also at Department of Physics and Astronomy, University of Victoria, Victoria, BC, Canada
- ^o Also at Department of Physics, California State University, Sacramento, USA
- ^p Also at Department of Physics, King's College London, London, UK
- ^q Also at Department of Physics, Royal Holloway University of London, Egham, UK
- ^r Also at Department of Physics, University of Fribourg, Fribourg, Switzerland
- ^s Also at Department of Physics, University of Thessaly, Thessaly, Greece
- ^t Also at Department of Physics, Westmont College, Santa Barbara, USA
- ^u Also at Fakultät für Mathematik und Naturwissenschaften, Fachgruppe Physik, Bergische Universität Wuppertal, Wuppertal, Germany
- ^v Also at Hellenic Open University, Patras, Greece
- ^w Also at Institutio Catalana de Recerca i Estudis Avancats, ICREA, Barcelona, Spain
- ^x Also at Institut für Experimentalphysik, Universität Hamburg, Hamburg, Germany
- ^y Also at Institute of Applied Physics, Mohammed VI Polytechnic University, Ben Guerir, Morocco
- ^z Also at Institute of Particle Physics (IPP), Burnaby, Canada
- ^{aa} Also at Institute of Physics and Technology, Ulaanbaatar, Mongolia
- ^{ab} Also at Institute of Physics, Azerbaijan Academy of Sciences, Baku, Azerbaijan
- ^{ac} Also at Institute of Theoretical Physics, Ilia State University, Tbilisi, Georgia
- ^{ad} Also at IRFU, CEA, Université Paris-Saclay, Gif-sur-Yvette, France
- ^{ae} Also at Lawrence Livermore National Laboratory, Livermore, USA
- ^{af} Also at School of Physics and Astronomy, University of Birmingham, Birmingham, UK
- ^{ag} Also at The Collaborative Innovation Center of Quantum Matter (CICQM), Beijing, China
- ^{ah} Also at TRIUMF, Vancouver, BC, Canada
- ^{ai} Also at Università di Napoli Parthenope, Naples, Italy
- ^{aj} Also at Department of Physics, University of Colorado Boulder, Boulder, CO, USA
- ^{ak} Also at Washington College, Chestertown, MD, USA
- ^{al} Also at Physics Department, An-Najah National University, Nablus, Palestine
- * Deceased