

Auger Collaboration

Colomb, R.¹, Colombo, E.¹, Rovero, R.¹, Garcia, B.², Miranda, E.², Norte, F.², Weisz, J.², Anchordoqui, L.³, Cillis, A.N.³, Dova, M.T.³, Epele, L.N.³, Lorente, H.³, Roulet, E.³, Sciutto, S.J.³, Vignoni, E.³, Azcarate, I.⁴, Bajaja, E.⁴, Bava, J.A.⁴, Combi, J.A.⁴, Perez-Bergliaffa, S.⁴, Romero, G.E.⁴, Sans, A.J.⁴, Bauleo, P.⁵, Bernaola, O.A.⁵, Etchegoyen, A.⁵, Fernandez-Niello, J.⁵, Fernandez, R.O.⁵, Ferrero, A.⁵, Filevich, A.⁵, Hasenbalg, F.⁵, Ibanez, J.⁵, Mostafa, M.⁵, Piegaia, R.⁵, Pizarro, R.A.⁵, Ravignani, D.⁵, Rodrigues, J.⁵, Ceballos, A.⁶, Garcia, A.⁶, Masperi, L.⁶, Montemayor, R.⁶, Nassif, E.⁶, Silva, G.⁶, Zemba, G.⁶, Akhperjanian, A.⁷, Chilingarian, A.⁷, Hovsepien, G.⁷, Mnatzakanian, E.⁷, Sahakian, V.⁷, Ter-Antonian, S.⁷, Bird, D.⁸, Clay, R.⁸, Dawson, B.⁸, Aguirre, C.⁹, Ticona, R.⁹, Velarde, A.⁹, Zaratti, F.⁹, Biral, R.¹⁰, Dobrigkeit-Chinellato, C.¹⁰, Chinellato, J.A.¹⁰, Escobar, C.¹⁰, Fauth, A.¹⁰, Guzzo, M.¹⁰, Kemp, E.¹⁰, Mengotti, N.¹⁰, Nogima, H.¹⁰, Gustavo dos Santos, L.¹⁰, Shibuya, E.¹⁰, Turtelli, A.¹⁰, Gouffon, P.¹¹, Funchal, R.Z.¹¹, Alves, G.¹², Goncalves do Amaral, M.¹², dos Anjos, J.¹², Diaz, J.M.C.¹², Mundim, L.¹², Paschoa, A.¹², Polme, M.E.¹², Shellard, R.¹², de Souza, M.¹², Valente, L.G.¹², Vaz, M.¹², Gandelman, M.¹³, Marchal, B.M.¹³, de Mello Neto, J.¹³, de Paula, L.¹³, Ma, Y.¹⁴, Bai, X.¹⁴, Jiang, Y.¹⁴, Zhang, C.¹⁴, Xu, C.¹⁴, Sheng, C.¹⁴, Sheng, P.¹⁴, Dai, Y.¹⁴, Shao, X.¹⁴, He, H.¹⁴, Gao, X.¹⁴, Grygar, J.¹⁵, Hrabovsky, M.¹⁵, Palatka, M.¹⁵, Ridky, J.¹⁵, Schovaneck, P.¹⁵, Soukup, L.¹⁵, Hudec, R.¹⁶, Boutillon, E.¹⁷, Rigault, C.¹⁷, Vallet, R.¹⁷, Meyer, F.¹⁸, Tisserand, E.¹⁸, Tuckey, P.¹⁸, Vernotte, F.¹⁸, Vincent, A.¹⁸, Vincent, M.¹⁸, Boutonnet, C.¹⁹, Brunet, J.M.¹⁹, Capdevielle, J.N.¹⁹, Courty, B.¹⁹, Frenkiel, P.¹⁹, Guglielmi, L.¹⁹, Le Gall, C.¹⁹, Tristram, G.¹⁹, Waisbard, J.¹⁹, Bertou, X.²⁰, Billoir, P.²⁰, Boratav, M.²⁰, Castera, A.²⁰, Dagoret-Campagne, S.²⁰, David, J.²⁰, Letessier-Selvon, A.²⁰, Strachman, Z.²⁰, Bonazzola, S.²¹, Lemoine, M.²¹, Peter, P.²¹, Glastetter, R.²², Kampert, K.H.²², Schmidt, F.K.²², Ziegler, P.²², Bluemer, H.²³, Grindler, A.²³, Gumbsheimer, R.²³, Heck, D.²³, Keim, H.²³, Klages, H.O.²³, Kleifges, M.²³, Kleinfeller, J.²³, Sackmann, C.²³, Thouw, T.²³, Ulrich, H.²³, Bormann, D.²⁴, Gemmeke, H.²⁴, Tcherniakovski, D.²⁴, Fokitis, E.²⁵, Hatzitheodorides, E.²⁵, Kyriakides, G.²⁵, Kytopoulos, V.²⁵, Liarokapis, T.²⁵, Maltezos, S.²⁵, Manolatu, K.²⁵, Moshovis, C.²⁵, Papantonopoulos, L.²⁵, Petrides, A.²⁵, Topalis, F.²⁵, Travlos, T.²⁵, Vasiliou, M.²⁵, Vlastou, R.²⁵, Borreani, G.²⁶, Cester, R.²⁶, Menichetti, E.²⁶, Pastrone, N.²⁶, Aramo, C.²⁷, Cangiano, E.²⁷, Fonte, R.²⁷, Raia, G.²⁷, Argiro, S.²⁸, Camin, D.V.²⁸, Guerard, C.²⁸, Manfredi, P.F.²⁸, Ratti, L.²⁸, Re, V.²⁸, Speziali, V.²⁸, Bocci, V.²⁹, Canale, V.²⁹, Facal, P.²⁹, Mastroianni, F.²⁹, Matthiae, G.²⁹, Privitera, P.²⁹, Salina, G.²⁹, Hayashida, N.³⁰, Honda, K.³⁰, Kawakami, S.³⁰, Teshima, M.³⁰, Yoshida, S.³⁰, Bello, P.³¹, Castro, J.³¹, Cordero, A.³¹, de-Ita, G.³¹, Daz, L.³¹, Fernandez, A.³¹, Ibaez, A.³¹, Lpez, R.³¹, Lozada, R.³¹, Martinez, F.³¹, Miranda, P.³¹, Muoz, G.A.³¹, Nuez, J.M.³¹, Roman, S.³¹, Rosado, A.³¹, Salazar, H.³¹, Vargas, A.³¹, Vargas, M.³¹, Arteaga, J.C.³², Casimiro-Linares, E.³², Contreras, G.³², Cotti, U.³², Garca, E.³², Flores, J.C.³², Garca-Compean, H.³², Garca, J.A.³², Huerta, R.³², Matos, T.³², Prez-Lorenzana, A.³², Pelayo, R.³², Zepeda, A.³², D'Olive, J.C.³³, Miroshnichenko, L.³³, Nellen, L.³³, Urrutia, L.³³, Valdes, J.F.³³, Alcaraz, F.³⁴, Medina, M.³⁴, Pacheco, C.³⁴, Villaseor, L.³⁴, Zannias, T.³⁴, Kutschera, M.³⁵, Chmaj, T.³⁵, Ostrowski, M.³⁵, Wilczynska, B.³⁵, Wilczynski, H.³⁵, Giller, M.³⁶, Szadkowski, Z.³⁶, Tkaczyk, W.³⁶, Aynutdinov, V.³⁷, Kokoulin, R.³⁷, Petrukhin, A.³⁷, Yashin, I.³⁷, Arcon, I.³⁸, Filipcic, A.³⁸, Kobal, M.³⁸, Zavrtanik, D.³⁸, Zavrtanik, M.³⁸, Clark, P.³⁹, Darnell, M.³⁹, Knapp, J.³⁹, Lloyd-Evans, J.³⁹, Watson, A.³⁹, Harton, J.⁴⁰, Malchow, R.⁴⁰, Sites, J.⁴⁰, Warner, D.⁴⁰, Wilson, R.⁴⁰, Brack, J.⁴¹, Hofman, G.⁴¹, Pollock, S.⁴¹, Ristinen, R.⁴¹, Zafiratos, C.⁴¹, Zweibel, E.⁴¹, Cronin, J.W.⁴², Gibbs, K.⁴², Kutter, T.⁴², Olinto, A.⁴², Pryke, C.⁴², Rosner, J.⁴², Swordy, S.⁴², Albrow, M.⁴³, Andrews, R.⁴³, Cummings, M.A.⁴³, Droegge, T.⁴³, Glass, H.⁴³, Groves, T.⁴³, Hojvat, C.⁴³, Kautzky, H.⁴³, Mantsch, P.⁴³, Mazur, P.⁴³, Voyvodic, L.⁴³, Matthews, J.M.⁴⁴, Meyhandan, R.⁴⁴, Ball, B.⁴⁵, Stark, W.⁴⁵, Nitz, D.⁴⁶, Dieterle, B.⁴⁷, Gold, M.⁴⁷, Matthews, J.A.J.⁴⁷, Seidel, S.⁴⁷, Machacek, M.⁴⁸, Paul, Y.⁴⁸, Swain, J.⁴⁸, Taylor, L.⁴⁸, Beach, S.⁴⁹, Beatty, J.⁴⁹, Coutu, S.⁴⁹, DuVernois, M.⁴⁹,

**Cassiday, G.⁵⁰ , Fick, B.⁵⁰ , Sommers, P.⁵⁰ , Do, T.T.⁵¹ , Huynh, D.P.⁵¹ , Huynh, T.N.⁵¹ , Hoang, D.L.⁵² ,
Nguye, H.Q.⁵² , Tran, H.P.⁵² , Vo, V.T.⁵²**

- ¹*Comisin Nacional de Actividades Espaciales (CONAE) - Instituto de Astronomia y Fsica del Espacio (IAFE), C.C. 67, Suc. 28, 1428 Buenos Aires, Argentina*
- ²*Centro Regional de Investigaciones Cientificas y Tecnologas (CRICyT), Bajada de Cerro s/n, Parque Gral. San Martin, CC 131 - 5500, Mendoza, Argentina*
- ³*Universidad Nacional de La Plata, Facultad de Ciencias Exactas, Departamento de Fsica, C.C., 67 - 1900 La Plata, Argentina*
- ⁴*Instituto Argentino de Radioastronomia (IAR) - Pereyra Iraola, C.C. 5, 1894 Villa Elisa, Provincia de Buenos Aires, Argentina*
- ⁵*Laboratorio TANDAR-CNEA and Facultad de Ciencias Exactas y Naturales (FCEyN), Departamento de Fsica, Comisin Nacional de Energa Atmica, Av. del Libertador 8250, (1429) Buenos Aires, Argentina*
- ⁶*Centro Atmico Bariloche e Instituto Balseiro (CNEA - Universidad de Cuyo), 8400 S.C. de Bariloche, Argentina*
- ⁷*Yerevan Physics Institute, Alikhanian Brothers Str.2, Yerevan 36, Armenia*
- ⁸*University of Adelaide, Department of Physics and Mathematical Physics, University of Adelaide (South Australia) 5005, Australia*
- ⁹*University of La Paz, Instituto de Investigaciones Fisicas, Universidad Mayor de San Andres, PO Box 8635, La Paz, Bolivia*
- ¹⁰*University of Campinas (UNICAMP), CP 6187 CGI, 13083-970 Campinas, Brazil*
- ¹¹*University of Sao Paulo, Instituto de Fisica, Universidade de Sao Paulo (CP 66318), 05389-970 Sao Paulo, SP, Brazil*
- ¹²*CBPF-LAFEX (Centro Brasileiro de Pesquisas Fisicas) Catholic University, Rio (PUC) and Universidade Federal Fluminense, Rua Xavier Sigaud 150, 22290-180 Rio de Janeiro, RJ, Brazil*
- ¹³*Physics Institute - Federal University, Instituto de Fisica, Universidade Federal do Rio de Janeiro, Cidade Universitaria - CT/Bl. A, Ilha do Fundao, 21945-970 (RJ), Brazil*
- ¹⁴*Institute of High Energy Physics (IHEP), High Energy Astrophysics Lab, P.O.BOX 918-3 - Beijing 100039, China*
- ¹⁵*Institute of Physics (FZU), The Academy of Sciences of the Czech Republic, Na Slovance 2, CZ-182 21 Praha 8, Czech Republic*
- ¹⁶*Astronomical Institute (ASU), The Academy of Sciences of the Czech Republic, CZ-251 65 Ondrejov, Czech Republic*
- ¹⁷*Ecole Nationale Suprieure de Tlcommunications de Paris (ENST), 46 rue Barrault, 75634 Paris Cedex 13, France*
- ¹⁸*Laboratoire du Temps et des Frquences de l'Observatoire de Besanon, 41bis Avenue de l'Observatoire (BP 1615), 25010 Besanon, Cedex, France*
- ¹⁹*Laboratoire de Physique Corpusculaire et Cosmologie du Collge de France (PCC-CdF), 11 Place Marcelin-Berthelot, 75231 Paris Cedex 5, France*
- ²⁰*Laboratoire de Physique Nuclaire et de Hautes Energies, Universit Paris 6 (LPNHE), LPNHE - Universit Paris 6 (Bote 200), 4 Place Jussieu (Tour 33 RdC), 75252 Paris Cedex 05, France*
- ²¹*Dpartement d'Astrophysique Relativiste et de Cosmologie (DARC), Observatoire de Paris-Meudon, Place Jules Janssen, 92195 MEUDON Cedex, France*
- ²²*Universitt Karlsruhe (TH) - Institut fr Experimentelle Kernphysik, Postfach 6980, 76128 Karlsruhe, Germany*
- ²³*Forschungszentrum Karlsruhe (FZK) - Institut fr Kernphysik (IK), Postfach 3640, 76021 Karlsruhe, Germany*
- ²⁴*Forschungszentrum Karlsruhe (FZK) - Hauptabteilung Prozessdatenverarbeitung und Elektronik, Postfach*