

A Northern Sky Survey for 100 TeV γ -ray Source Using the Tibet Air Shower Array and Muon Detector Array

M. Amenomori,¹ Y.-W. Bao,² X. J. Bi,³ D. Chen,⁴ T. L. Chen,⁵ W. Y. Chen,³ Xu Chen*,³
Y. Chen,² Cirennima,⁵ S. W. Cui,⁷ Danzengluobu,⁵ L. K. Ding,³ J. H. Fang,^{3,6}
K. Fang,³ C. F. Feng,⁸ Zhaoyang Feng,³ Z. Y. Feng,⁹ Qi Gao,⁵ Q. B. Gou,³ Y. Y. Guo,³
Y. Q. Guo,³ H. H. He,³ Z. T. He,⁷ K. Hibino,¹⁰ N. Hotta,¹¹ Haibing Hu,⁵ H. B. Hu,³
J. Huang,³ H. Y. Jia,⁹ L. Jiang,³ H.-B. Jin,⁴ F. Kajino,¹² K. Kasahara,¹³ Y. Katayose,¹⁴
C. Kato,¹⁵ S. Kato,¹⁶ K. Kawata,¹⁶ W. Kihara,¹⁵ Y. Ko,¹⁵ M. Kozai,¹⁷ Labaciren,⁵
G. M. Le,¹⁸ A. F. Li,^{19,8,3} H. J. Li,⁵ W. J. Li,^{3,9} Y.-H. Lin,^{3,6} B. Liu,² C. Liu,³ J. S. Liu,³
M. Y. Liu,⁵ W. Liu,³ Y.-Q. Lou,²⁰ H. Lu,³ X. R. Meng,⁵ H. Mitsui,¹⁴ K. Munakata,¹⁵
H. Nakada,¹⁴ Y. Nakamura,³ H. Nanjo,¹ M. Nishizawa,²¹ M. Ohnishi,¹⁶ T. Ohura,¹⁴
S. Ozawa,²² X. L. Qian,²³ X. B. Qu,²⁴ T. Saito,²⁵ M. Sakata,¹² T. K. Sako,¹⁶
Y. Sengoku,¹⁴ J. Shao,^{3,8} M. Shibata,¹⁴ A. Shiomi,²⁶ H. Sugimoto,²⁷ W. Takano,¹⁰
M. Takita,¹⁶ Y. H. Tan,³ N. Tateyama,¹⁰ S. Torii,²⁸ H. Tsuchiya,²⁹ S. Udo,¹⁰ H. Wang,³
H. R. Wu,³ L. Xue,⁸ K. Yagisawa,¹⁴ Y. Yamamoto,¹² Z. Yang,³ Y. Yokoe,¹⁶ A. F. Yuan,⁵
L. M. Zhai,⁴ H. M. Zhang,³ J. L. Zhang,³ X. Zhang,² X. Y. Zhang,⁸ Y. Zhang,³
Yi Zhang,³ Ying Zhang,³ S. P. Zhao,³ Zhaxisangzhu,⁵ and X. X. Zhou⁹
(The Tibet AS γ Collaboration)

- ¹*Department of Physics, Hirosaki University, Hirosaki 036-8561, Japan*
- ²*School of Astronomy and Space Science, Nanjing University, Nanjing 210093, China*
- ³*Key Laboratory of Particle Astrophysics, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China*
- ⁴*National Astronomical Observatories, Chinese Academy of Sciences, Beijing 100012, China*
- ⁵*Physics Department of Science School, Tibet University, Lhasa 850000, China*
- ⁶*University of Chinese Academy of Sciences, Beijing 100049, China*
- ⁷*Department of Physics, Hebei Normal University, Shijiazhuang 050016, China*
- ⁸*Department of Physics, Shandong University, Jinan 250100, China*
- ⁹*Institute of Modern Physics, SouthWest Jiaotong University, Chengdu 610031, China*
- ¹⁰*Faculty of Engineering, Kanagawa University, Yokohama 221-8686, Japan*
- ¹¹*Utsunomiya University, Utsunomiya 321-8505, Japan*
- ¹²*Department of Physics, Konan University, Kobe 658-8501, Japan*
- ¹³*Shibaura Institute of Technology, Saitama 337-8570, Japan*
- ¹⁴*Faculty of Engineering, Yokohama National University, Yokohama 240-8501, Japan*
- ¹⁵*Department of Physics, Shinshu University, Matsumoto 390-8621, Japan*
- ¹⁶*Institute for Cosmic Ray Research, University of Tokyo, Kashiwa 277-8582, Japan*
- ¹⁷*Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (ISAS/JAXA), Sagamihara 252-5210, Japan*
- ¹⁸*National Center for Space Weather, China Meteorological Administration, Beijing 100081, China*
- ¹⁹*School of Information Science and Engineering, Shandong Agriculture University, Taian 271018, China*
- ²⁰*Physics Department, Astronomy Department and Tsinghua Center for Astrophysics, Tsinghua-National Astronomical Observatories of China joint Research Center for Astrophysics, Tsinghua University, Beijing 100084, China*
- ²¹*National Institute of Informatics, Tokyo 101-8430, Japan*
- ²²*Advanced ICT Research Institute, National Institute of Information and Communication Technology, Koganei 184-8795, Japan*
- ²³*Department of Mechanical and Electrical Engineering, Shandong Management University, Jinan 250357, China*
- ²⁴*College of Science, China University of Petroleum, Qingdao, 266555, China*
- ²⁵*Tokyo Metropolitan College of Industrial Technology, Tokyo 116-8523, Japan*
- ²⁶*College of Industrial Technology, Nihon University, Narashino 275-8576, Japan*
- ²⁷*Shonan Institute of Technology, Fujisawa 251-8511, Japan*
- ²⁸*Research Institute for Science and Engineering, Waseda University, Tokyo 169-8555, Japan*
- ²⁹*Japan Atomic Energy Agency, Tokai-mura 319-1195, Japan*

E-mail: chenxu@ihep.ac.cn

The Tibet AS γ experiment located at 4300 m above sea level, Tibet, China, has a wide field of view and large effective area. It consists of the Tibet air-shower array (Tibet-AS), the air-shower core-detector array (YAC) and the underground water-Cherenkov muon-detector array (Tibet-MD). The Tibet-MD array significantly improves its gamma-ray sensitivity in the 10-1000 TeV energy region by an order of magnitude better than any other previous existing experiments in the world. In this paper we will search the γ -ray sources using data taken from 2014. The result shows the direction to the Crab has the most excess in the number of candidate primary γ rays from 3 TeV to 500 TeV. This is the first detection of the highest energy photons beyond 100 TeV from an astrophysical source, and thus opens up the sub-PeV window in astronomy.

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*Speaker.