

# THE ENERGY SPECTRUM OF ALL-PARTICLE COSMIC RAYS AROUND THE KNEE REGION OBSERVED WITH THE TIBET AIR SHOWER ARRAY

M. Amenomori (1), S. Ayabe (2), S.W. Cui (3), L.K. Ding (3), X.Y.Ding (4), C.F. Feng (5), Z.Y. Feng (6), Y. Fu (5), X.Y. Gao (7), Q.X. Geng (7), H.W. Guo (4), M. He (5), K. Hibino (8), **N. Hotta** (9), J. Huang (9), Q. Huang (6), A.X. Huo (3), K. Izu (10), H.Y. Jia (6), F. Kajino (11), K. Kasahara (12), Y. Katayose (13), K. Kawata (11), Labaciren (4), G.M. Le (14), J.Y. Li (5), H. Lu (3), S.L. Lu (3), G.X. Luo (3), X.R. Meng (4), K. Mizutani (2), J. Mu (7), H. Nanjo (1), M. Nishizawa (15), M. Ohnishi (10), I. Ohta (9), T. Ouchi (8), S. Ozawa (9), J.R. Ren (3), T. Saito (16), M. Sakata (11), T. Sasaki (17), M. Shibata (13), A. Shiomi (10), T. Shirai (8), H. Sugimoto (18), K. Taira (18), M. Takita (10), Y.H. Tan (3), N. Tateyama (8), S. Torii (8), S. Udo (2), T. Utsugi (2), C.R. Wang (5), H. Wang (3), X. Wang (5), X.W. Xu (3,10), L. Xu (5), X.C. Yang (7), Y. Yamamoto (11), Z.H. Ye (14), G.C. Yu (6), A.F. Yuan (4), T. Yuda (19), H.M. Zhang (3), J.L. Zhang (3), N.J. Zhang (5), X.Y. Zhang (5), Zhaxiciren (4) and Zhaxisangzhu (4)

(1) Dept. of Phys., Hirosaki Univ., Hirosaki, Japan, (2) Dept. of Phy., Saitama Univ., Urawa, Japan, (3) Cosmic Ray and HE Astrophys. Lab, IHEP, CAS, Beijing, China, (4) Dept. of Math. and Phys., Tibet Univ., Lhasa, China, (5) Dept. of Phys., Shangdong Univ., Jinan, China, (6) Inst. of Modern Phys., South West Jiaotong Univ., Chengdu, China, (7) Dept. of Phy., Yunnan Univ., Kunming, China, (8) Faculty of Eng., Kanagawa Univ., Yokohama, Japan, (9) Faculty of Ed., Utsunomiya Univ., Utsunomiya, Japan, (10) ICRC, Univ. of Tokyo, Kashiwa, Japan, (11) Dept. of Phys., Konan Univ., Kobe, Japan, (12) Faculty of Systems Eng., Shibaura Inst. of Technology, Omiya, Japan, (13) Dept. of Phys., Yokohama Natl. Univ., Yokohama, Japan, (14) Center of Space Sci. and Application Res., CAS, Beijing, China, (15) Natl. Inst. for Informatics, Tokyo, Japan, (16) Tokyo Metropolitan Coll. of Aeronautical Eng., Tokyo, Japan, (17) CCDL Lab, Waseda Univ., Tokyo, Japan, (18) Shonan Inst. of Technology, Fujisawa, Japan, (19) STEL, Nagoya Univ., Nagoya Japan.

We will present the energy spectrum of all-particle cosmic rays around the knee region, based on the data taken with the Tibet-III air-shower array where wide dynamic-range PMTs were newly installed on the detectors with 15m spacing last summer. This extension enables us to cover the energy region from  $10^{14}$  to  $10^{17}$  eV, wider than the previous one( $10^{14.6} - 10^{16.3}$  eV).