Zi-Yuan Li

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EDUCATION SUN-YAT-SEN University, Guangdong, China • Ph.D. in High Energy Physic Sep 2012 - Dec 2017 · Thesis: Antiproton-to-Proton flux ratio measurement of AMS02 • Adviser: Prof.Zhenhui He, Prof.Shih-Chang Lee, Prof.Sadakazu Haino • Focus: Data Processing and Analysis, Statistic, Detector Reconstruction, Multi Variable Analysis, Template Fit SUN-YAT-SEN University, Guangdong, China B.S. in Optical Information Science and Technology • Main Courses: C++, Quantum Mechanics, Probability and Statistic, Semiconductor Materials RESEARCH CERN, Researcher in Taiwan Group of AMS02 Experiment EXPERIENCE Antiproton-to-Proton flux ratio measurement Jan 2015 - Nov 2016 of dark matter. challenge work in this analysis. estimated. Jan 2014 – Jan 2015 The velocity reconstruction of Ring Image Cherenkov Detector velocity and electric charge of particles. mode of the Cherenkov photon is the major issue in this analysis. reject electron background, this work have been published in Chinese Physic C (IF:5.08) in May, 2017. PUBLICATIONS JOURNALS C41, 056001, May 2017. Letter, 117, 231102, Nov 2016. International Space Station." Physic Review Letter, 117, 091103, Aug 2016. Rigidities 1.9 GV to 3 TV with the Alpha Magnetic Spectrometer on the International Space Station." Physic Review Letter, 115, 211101, Nov 2015. Letter, 114, 171103, Apr 2015. [6] M.Aguilar et al., AMS Collaboration, "Electron and Positron Fluxes in Primary Cosmic Rays Measured with the Alpha Magnetic Spectrometer on the International Space Station." Physic Review Letter, 113, 121102, Sep 2014.

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- [8] M.Aguilar et al., AMS Collaboration, "First Result from the Alpha Magnetic Spectrometer on the International Space Station: Precision Measurement of the Positron Fraction in Primary Cosmic Rays of 0.5–350 GeV." Physic Review Letter, 110, 141102, Apr 2013.

CONFERENCES

• AMS General Meeting at the Ettore Majorana Foundation and Centre for Scientific Culture in Erice, Sicily, Italy. Aug 2016

- Purpose: The precise measurement of Antiproton-to-Proton flux ratio up to 450 GV will be able to improve our understanding of the production and propagation of Cosmic Ray. Moreover, it's one of the indirect detection channel
- Difficulty: Due to lack of antiproton statistic, to select pure antiproton signal with high efficiency will be the most
- Main Work: At low rigidity region (below 3 GV), I propose to use RICH as a veto to remove electron background; At middle rigidity region (between 3 GV - 50 GV), a template fit method is used to get the antiproton counting; At high rigidity region (above 50 GV), tracker is the only detector we can use to separate antiproton from proton, therefore a Boost Decision Tree is built base on tracker relative variables to reject charge confusion proton. Later an unfolding is done to get the true particle rigidity on top of AMS02. At the end of this analysis, a robust systematic error have been
- Purpose: The AMS-02 Ring Imaging Cherenkov detector is designed to provide a very precise measurement of the
- Difficulty: Due to special geometry of AMS02 RICH detector, the Cherenkov photon produced in radiator could propagate directly to PMT detection plane, also it could reflect by the mirror. To determine which kind of propagation
- Main Work: Maximum Likelihood method is used to determine the Cherenkov angle. In order to get pure antiproton candidate at low rigidity region (below 3 GV), a simple Monte Carlo approach "Ray Tracing Integration" is used to
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- [2] M.Aguilar et al., AMS Collaboration, "Precision Measurement of the Boron to Carbon Flux Ratio in Cosmic Rays from 1.9 GV to 2.6 TV with the Alpha Magnetic Spectrometer on the International Space Station." Physic Review
- [3] M.Aguilar et al., AMS Collaboration, "Antiproton Flux, Antiproton-to-Proton Flux Ratio, and Properties of Elementary Particle Fluxes in Primary Cosmic Rays Measured with the Alpha Magnetic Spectrometer on the
- [4] M.Aguilar et al., AMS Collaboration, "Precision Measurement of the Helium Flux in Primary Cosmic Rays of
- [5] M.Aguilar et al., AMS Collaboration, "Precision Measurement of the Proton Flux in Primary Cosmic Rays from Rigidity 1 GV to 1.8 TV with the Alpha Magnetic Spectrometer on the International Space Station." Physic Review

Sep 2008 – Jul 2012

	 CASPAR::Codes in AstroParticle Research::2014, DESY Hamburg, Germany. 	Sep 2014
AWARDS & SCHOLARSHIPS	 Taiwan ASGC Scholarships Contribute to AMS02 analysis in Taiwan group, 2000 CHF/month. 	2015 - 2016
	 AMS02 Scholarships, CSC Chinese Scholarships Council, 1900 CHF/month. 	2013 – 2015
	 National Encouragement Scholarships, SYSU GPA 4.2/5.0, Rate 2/103. 	Sep 2011
	 National First Class Scholarships, SYSU GPA 4.2/5.0, Rate 2/103. 	Sep 2011
LANGUAGES	English: Fluent (speaking, reading, writing).Cantonese: Native language.Mandarin: Native language.	
SKILLS	LATEX, C++ Programing, MATLAB, Mathematica, ROOT, Python, Ruby, Bash Shell, TMVA, RootFit, Microsoft Word, Microsoft Excel, Microsoft PowerPoint.	
INTERESTS	Cosmology, Photography, Cooking, Fitness, Basketball.	

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