

Measurement of π^- Inclusive Cross-Section on Argon in the LArIAT Detector

Author 1,¹ Author 2,²

¹*Institution 1*

²*Institution 2*

(ArgoNeuT Collaboration)

(Dated: September 24, 2016)

We present the blah blah blah....

I. INTRODUCTION

ACKNOWLEDGMENTS

II. OVERVIEW OF THE ANALYSIS

III. OVERVIEW OF THE LARIAT EXPERIMENT

LArIAT gratefully acknowledges

IV. PION INTERACTION CROSS-SECTION

A. Thin slice method

B. Thick Target Method - Slicing the LArTPC in thin targets

V. EVENT SELECTION

VI. RESULTS

A. Systematic Error

VII. DISCUSSION

VIII. CONCLUSIONS

Appendix A: Any appendix necessary

In conclusion, the LArIAT Collaboration reports...

-
- [1] J. Beringer et al. (Particle Data Group), Phys. Rev. D **86** 010001 (2012).
 - [2] S. J. Barish et al., Phys. Rev. Lett. **33** 448 (1974).
 - [3] M. Derrick et al., Phys. Rev. D **23** 569 (1981).
 - [4] W. Y. Lee et al., Phys. Rev. Lett. **38** 202 (1977).
 - [5] W. Krenz et al. [Gargamelle Neutrino Propane Collaboration and Aachen-Brussels-CERN-Ecole Po], Nucl. Phys. B **135** 45 (1978).
 - [6] S. Nakayama et al. [K2K Collaboration], Phys. Lett. B **619** 255 (2005) [arXiv:hep-ex/0408134].
 - [7] A. A. Aguilar-Arevalo et al. [MiniBooNE Collaboration], Phys. Lett. B **664** 41 (2008) [arXiv:hep-ex/0803.3423].
 - [8] A. A. Aguilar-Arevalo et al. [MiniBooNE Collaboration], Phys. Rev. D **83** 052009 (2011) [arXiv:hep-ex/1010.3264].
 - [9] A. A. Aguilar-Arevalo et al. [MiniBooNE Collaboration], Phys. Rev. D **81** 013005 (2010) [arXiv:hep-ex/0911.2063].
 - [10] Y. Kurimoto et al. [SciBooNE Collaboration], Phys. Rev. D **81** 033004 (2010) [arXiv:hep-ex/0910.5768].
 - [11] Hasegawa, M. et al. [K2K Collaboration], Phys. Lett. B **619** 255-262 (2005) [arXiv:hep-ex/0408134].
 - [12] M. Freund, Phys. Rev. D **64** 053003 (2001) [arXiv:hep-ph/0103300].
 - [13] The MicroBooNE Technical Design Report[MicroBooNE Collaboration], <http://www-microboone.fnal.gov/publications/TDRCD3.pdf> (2012).
 - [14] C. Adams et al. [LAr1-ND Collaboration], arXiv:hep-ex/1309.7987 (2013).
 - [15] R. Acciarri et al. [SBN Program], arXiv:hep-ex/1503.01520 (2015).
 - [16] C. Adams et al. [LBNE Collaboration], arXiv:hep-ex/1307.7335 (2013).
 - [17] C. Rubbia, CERN-EP/77-08 (1977).
 - [18] ICARUS Collaboration, Journal of Instrumentation **6** P07011 (2011).

- [19] A. Szelc, “Results from and Status of ArgoNeuT and MicroBooNE” presentation at Neutrino 2014 <https://indico.fnal.gov/getFile.py/access?contribId=294&sessionId=25&resId=0&materialId=slides&confId=8022> (2014).
- [20] ICARUS Collaboration, *Acta Phys. Polon* **B41** 103-125 (2010).
- [21] C. Athanassopoulos et al., *Phys. Rev. Lett.* **75** 2650 (1995); **77** 3082 (1996); **81** 1774 (1998); *Phys. Rev. C* **58** 2489 (1998); A. Aguilar et al., *Phys. Rev. D* **64** 112007 (2001).
- [22] A. A. Aguilar-Arevalo et al. [MiniBooNE Collaboration], *Phys. Rev. Lett.* **110** 161801 (2013).
- [23] C. Andreopoulos et al., *Nucl. Instr. & Meth. A* **506** 250 (2003) Version 2.8.0 was used for this analysis .
- [24] T. Golan, C. Juszczak and J. T. Sobczyk, *Phys. Rev. C* **86** 015505 (2012) We use version 11m for this analysis.
- [25] C. Anderson et al, *JINST* Vol **7** P10019 (2012).
- [26] K. Anderson et al., FERMILAB-DESIGN-1998-01 (1998).
- [27] R. Acciarri et al, *Phys. Rev. D* **89** 112003 (2014).
- [28] D.G. Michael et al. [MINOS Collaboration], *Nucl. Instr. & Meth. A* **596** 190 (2008).
- [29] E. Church, arXiv:1311.6774 (2013).
- [30] S. Agostinelli et al., *Nucl. Instr. & Meth. A* **506** 250 (2003).
- [31] Application Software Group, CERN Program Library Long Writeup W5013,CERN (1994).
- [32] R. Acciarri et al, *Phys. Rev. Lett.* **113** 261801 (2014).
- [33] Hitlin, D. et al., *Nucl. Instrum. Meth.***137** 225 (1976).
- [34] Nelson, C. et al., *Nucl. Instrum. Meth.* **216** 381 (1983).