Elena Gramellini

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RESEARCH INTERESTS

Intensity Frontier, GUT and Flavor Physics. Data Analysis and Monte Carlo Simulation. Machine learning.

EDUCATION

Phd in Physics, **Yale University** expected defense: Spring 2018

Advisors: Prof Bonnie Fleming[1], Prof Flavio Cavanna[1]

M.S. in Nuclear and Particle Physics, **University of Bologna**, March 23^{rd} 2012

Thesis Title: Study of low p_T D^0 meson production at CDF II in $p\bar{p}$ collisions at $\sqrt{s} = 900$ GeV.

Advisor: Professor Stefano Zucchelli[2]

B.S. in Physics, **University of Bologna**, December 11^{th} 2009

Thesis Title: Optimization of the reconstruction of neutrino interaction vertices in OPERA experiment.

Advisor: Professor Maximiliano Sioli[2]

AWARDS

- Best poster at the 2017 International Neutrino Summer School, INSS 2017
- Winner of URA Visiting Scholar Program Award for the work "Study of nucleon decay topologies and their background in LArTPCs", URA 2015
- Winner of Leigh Page Prize, Yale University 2013
- Winner of the scholarship for the deepening of an international thesis, University of Bologna 2012
- Winner of the scholarship for international thesis, University of Bologna 2011
- Placed 3^{rd} in the contest Inventare il futuro, University of Bologna 2011
- Winner of the scholarship "Orfani Enasarco", Enasarco Foundation 2010, 2008-2006, 2004, 2003

RESEARCH EXPERIENCE

- **Hardware**
  * MicroBooNE CRT system
    - Testing and Installation of 73 CRT modules
    - CRT Module Construction
    - Trouble shooting of CRT Front End Board electronics
    - Design, management and installation of the cable connections for the entire system
    - Design of the Near Line CRT Metadata Storage in Fermilab file-system
    - Currently serving as CRT expert within the MicroBooNE Collaboration
  * Study of a Cherenkov Detector and a Muon Range Stack for the LArIAT Run I beam line.
  * Participated in the assembly and testing of the LArIAT Run III TPC.
- **Simulation**
  * Head of the LArIAT simulation production team
  * Design and implementation of the "Data Driven Monte Carlo" event generator for the LArIAT beam line
- **Analysis**

TEACHING EXPERIENCE

TALKS, POSTERS & PRESENTATIONS

I present regularly at the MicroBooNE and LArIAT Collaboration meetings and group meetings. What follows is the list of presentations given outside my collaborations.

- INSS 2017 (Poster), *Fermilab*, *IL* August 2017
  "A study of the inclusive hadronic kaon-argon interaction cross section"
- DPF 2017 (Talk), *Fermilab*, *IL* August 2017
  "A study of the inclusive hadronic kaon-argon interaction cross section"
- Joint SBN-DUNE Meeting (Talk), *Fermilab*, *IL* May 2017
  "MuCS measurements and CRT measurements"
- ICHEP 2016 (Poster), *Chicago*, *IL* August 2016
  "A MC study of kaon identification sensitivity in MicroBooNE"
- ICHEP 2016 (Poster), *Chicago*, *IL* August 2016
  "Study of the positive kaon total interaction cross section on Ar in LArIAT"
- Yale WIDG Seminar (Seminar), *New Haven*, *CT* May 2016
  "LArIAT - Liquid Argon In A Testbeam - Total $\pi - Ar$ cross section measurement"

- TAUP2015 (Talk), *Turin*, *Italy* September 2015
  "Studies of cosmogenic background to nucleon decay in MicroBooNE"

- New Perspectives 2015 (Talk), *Fermilab*, *IL* June 2015
  "LArIAT - Liquid Argon In A Testbeam"

- CIPANP2015 (Talk), *Veil*, *CO* May 2015
  "LArIAT - Liquid Argon In A Testbeam"

PUBLICATIONS/MANUSCRIPTS IN PREPARATION

As a member of the MicroBooNE, LArIAT and CDF Collaborations, I am co-author of $\sim$ 70 articles.

What follows is a list of selected publications.

- "A Novel Cosmic Ray Tagger System for Liquid Argon TPC Neutrino Detectors"
  Martin Auger *et al.*
  Instruments, DOI: 10.3390/instruments1010002

- "LArIAT: Liquid Argon In A Testbeam"
  J.Paley *et al.* [LArIAT Collaboration],
  arXiv:1406.5560

SKILLS

- Programming/scripting languages: C/C++, Python.

- Simulation packages: GEANT4, Genie.

- Data analysis: ROOT (C++), PyROOT, samweb.

- Other Software: Art & LArSoft, LaTeX, Mathematica, Office Package, Photoshop.

- Experience with MySQL, xml.

- Operating systems: Linux and Unix-based Operating Systems.

OUTREACH & COMMUNITY

- Elected member of the Climate and Diversity Committee
  for the Yale physics department 2014-ongoing

- MicroBooNE tour guide 2015-ongoing

- Speaker at the TechSavvy initiative for middle school girls in STEM March 2017

- PechaKucha Speaker at the Batavia PechaKucha night Vol.6 February 2017

- Virtual Reality tour guide for the Fermilab Family Open House February 2017

- Participant to the DUNE outreach initiative "We are DUNE " February 2017

- Virtual Reality tour guide for the Fermilab Family Open House — February 2017

- Fermilab Students and Postdocs Association elected fellow — 2015-2016

  * Head organizer of the 2016 New Perspectives conference
  * Participant to the Fermilab Congressional Visit 2016

- Participant to the Fermilab outreach initiative "Why I love Neutrinos " — December 2015

- Facilitator in the Yale Physics Olympics for high school students — 2014

- Participant to the international art workshop
  "Sing, dance, paint to open your heart promoted by the European Union — 2005

- Professional basketball player — 2005-2006

REFERENCES

Prof. Bonnie Fleming
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PhD advisor, MicroBooNE Co-Spokesperson. Fermilab & Yale University.

Prof. Flavio Cavanna
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MicroBooNE Co-Spokesperson. Fermilab.

Dr. Jennifer Raaf
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LArIAT Co-Spokesperson. Fermilab.

Prof. Jonathan Asaadi
jonathan.asaadi@uta.edu
LArIAT Co-Spokesperson. UTA.