Application for Full Membership – Lucilla Lanza

Status

I am currently a Tenure Track Researcher (RTDb) at University of Rome Tor Vergata: this research position is the Italian equivalent of Associate Professor Tenure Track. I am also an associate researcher of INFN Roma Tor Vergata. I am a Term Member of the CLAS collaboration since 2015.

My research activity concerns the study of the excited nucleon spectrum, with a particular interest in the KY electroproduction channel and in the search for exotic hybrid baryons states.
My Ph. D. activity was within CLAS12: the topic of the thesis was “A Search for Hybrid Baryons with CLAS12 experimental Setup”. The scientific results obtained during my Ph. D. have contributed to the Proposal "Search for Hybrid Baryons with CLAS12 in Hall B" (https://www.jlab.org/exp_prog/proposals/16/PR12-16-010.pdf), approved in July 2016 with an A-rating and 100 PAC days of data taking. The scientific relevance of the Proposal was confirmed from the more recent evaluation committee (PAC48) that considered the already approved experiments as scientifically relevant (Jeopardy process). The research program is included in a group of projects named “Run Group K” which is devoted to the Quark-Gluon Confinement and Strong QCD.

Approximately 50% of RGK assigned data have been already collected during two run periods in Fall 2018 and Spring 2024.
I have analyzed the data collected in the Fall 2018, exploiting the KY channel, and I am one of the leading authors of the paper “Beam-recoil transferred polarization in KY electroproduction in the nucleon resonance region with CLAS12”, Physical Review C, 105(6), published in 2022.

I am serving Run Group K as the “RGK chef”, responsible of the procedures related to runs calibration, events reconstruction and data skimming. As RGK chef I have fully participated to the pass2 “cooking” of Fall 2018 data, and I have contributed to write the codes that generate the QA timelines for the Forward Tagger subsystem.

In addition my research activity has been devoted to the study of the $\gamma N \rightarrow \pi^+\pi^- N$ reaction channel using data collected in 2012 with the CLAS experimental apparatus on a frozen spin HD target and circularly and transversely polarized photon beams to extract single and double polarization asymmetries. I contributed to the development of the reconstruction software for the data analysis.

From the hardware point of view I have been working with the PWO scintillating crystals employed for the Forward Tagger system (radiation hardness tests and analysis), with the installation of the Halo Counter used to assess the resistance of a HD frozen spin target to a 10 GeV electron beam and recently to the development of μRWELL gas detectors to be employed in the High Luminosity upgrade of the CLAS12 apparatus.

I have been elected to serve as the Chair of the CLAS Speakers Committee (CSC) since 28/09/2023, after participating as a CSC member since 16/12/2021 as Hadron Spectroscopy Working Group Alternate.

I have contributed at the CLAS12 shifts as a worker, I have been a Reviewer for CLAS notes and I gave several presentations at international conferences and workshops.

Commitments and plans

I am committed to continue my analysis of data collected by Run Group K during Fall 2018 and Spring 2024 periods, and by CLAS, g14 period. I also plan to continue the work with the muRWELL technology. I have a strong commitment to the CLAS12 physics program, especially to the KY electroproduction analyses. I plan to work closely with my colleagues at Jefferson Lab and to co-advice future graduate students.