



Miha Mihovilovič

Curriculum Vitae

Personal data

Name Miha
Surname Mihovilovič
Date of birth February 23, 1983
Place of birth Ljubljana, Slovenia
Nationality Slovenian

Education

2007–2012 **PhD in Experimental Nuclear Physics**, *University of Ljubljana, Faculty for mathematics and physics*, Ljubljana, Slovenia.
2002–2007 **Bachelor Degree in Physics**, *University of Ljubljana, Faculty for mathematics and physics*, Ljubljana, Slovenia.

Doctoral thesis

Title *Measurement of double polarized asymmetries in quasi-elastic processes $^3\vec{\text{He}}(\vec{e}, e'd)$ and $^3\vec{\text{He}}(\vec{e}, e'p)$*
Supervisors assoc. prof. dr. Simon Širca, dr. Douglas W. Higinbotham
Description The thesis is dedicated to a study of a spin-isospin structure of the polarized ^3He . Its main focus is the E05-102 experiment at Jefferson Lab, in which the reactions $^3\vec{\text{He}}(\vec{e}, e'd)$ and $^3\vec{\text{He}}(\vec{e}, e'p)$ in the quasi-elastic region were studied. The purpose of this experiment was to better understand the effects of the S'- and D-state contributions to the ^3He ground-state wave-functions by a precise measurement of beam-target asymmetries A_x and A_z in the range of recoil momenta from 0 to about 300 MeV/c.

Diploma thesis

Title *Tracking of unstable particles in magnetic spectrometers*
Supervisor assoc. prof. dr. Simon Širca
Description In my diploma thesis I studied transport of unstable particles (kaons and pions) through the spectrometers A and B of the A1 Collaboration at MAMI. First, I developed a stand alone program `simDecay` which generates particles at the target and simulates their transport through the spectrometers. The development of this computer simulation represents the main part of my diploma work. Then, I incorporated my code into the existing software `Simul++`, used for simulating arbitrary physical processes on real targets.

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Scientific Experience

I have participated in several experiments in Hall A, where I served as Shift Leader (in charge of a daily shift, communicates with the accelerator and writes shift summaries), Target Operator (manages the target) and Analyzer (controls data collecting process and and performs on-line checks of the data):

- 2007 **E05-110**: Precision Measurement of Longitudinal and Transverse Response Functions of Quasi-Elastic Electron Scattering in the Momentum Transfer Range $0.55 \text{ GeV}/c < q < 0.9 \text{ GeV}/c$.
- 2008 **E04-007**: Precision Measurement of the Electroproduction of π^0 Near Threshold: A Test of Chiral QCD Dynamics.
- 2009 **E06-014**: Precision Measurements of the Neutron dc: Towards the Electric XE and Magnetic XB Color Polarizabilities.
- 2009 **E05-015**: Measurement of the Target Single-Spin Asymmetry in Quasi-Elastic ${}^3\text{He}^\uparrow(e, e')$.
- 2009 **E08-005**: Measurement of the Target Single-Spin Asymmetry A_y in the Quasi-Elastic ${}^3\text{He}^\uparrow(e, e'n)$ Reaction.
- 2009 **E05-102**: Measurement of the A_x and A_z Asymmetries in the Quasi-Elastic ${}^3\vec{\text{He}}(\vec{e}, e'd)$ Reaction.
- 2009 **E05-109**: A Measurement of Nucleon Strange Form Factors at High Q^2 .
- 2009 **E08-011**: Parity Violation in Deep Inelastic Scattering (PVDIS).
- 2010 **E06-002**: Pb-208 radius experiment (PREX).
- 2010 **E07-007 and E08-025**: Separation of Deeply Virtual Photon and π^0 Electroproduction Observables of Unpolarized Protons.
- 2011 **E07-006**: Studying Short-Range Correlations in Nuclei at the Repulsive Core Limit via the Triple Coincidence $(e, e'pN)$ Reaction.
- 2011 **E08-014**: Three-Nucleon Short Range Correlations studies in Inclusive Scattering for $0.8 < Q^2 < 2.8 (\text{Gev}/c)^2$.
- 2011 **E08-027**: A Measurement of g_2^p and the Longitudinal-Transverse Spin Polarizability.
- 2012 **E08-007**: The proton form factor ratio at low Q^2 .

I have been engaged with the analysis of the experiments **E04-007** and **E04-115** (*G0 Backward Angle Measurement*), for which I determined the energy of the incoming electron beam.

I have experience with nuclear electronics. During the experiment E05-102 I was involved with a group that assembled the trigger electronics and set up the DAQ system.

Teaching Experience

since 2008 **Teaching Assistant**, *Faculty for mathematics and physics, University of Ljubljana*.
Teaching assistant for the laboratory courses Physics Practicum I and II.

Conferences, Workshops

- 2011 **International School of Nuclear Physics, 33rd Course: From Quarks and Gluons to Hadrons and Nuclei**, "Ettore Majorana" Foundation and Centre for Scientific Culture, September 16 – 24, Erice, Sicily.

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- 2010 **7th physicists Conference in basic research**, DMFA Slovenia and Faculty for mathematics and physics, University of Ljubljana, November 5th, Portorož, Slovenia.
Poster: Configuration and calibration of the BigBite spectrometer for the E05-102 experiment.
- 2010 **3rd MC-PAD Network Training Event**, Jožef Stefan Institute, September 26 – 30, Ljubljana, Slovenia.
- 2010 **27th students' workshop on electromagnetic interactions**, Institut für Kernphysik-Mainz, August 29 – September 3, Bosen, Germany.
Presentation: *Measurement of double polarized asymmetries in quasi-elastic processes $^3\vec{\text{He}}(\vec{e}, e'd)$ and $^3\vec{\text{He}}(\vec{e}, e'p)$.*
- 2010 **12th International Conference on Meson-Nucleon Physics and the Structure of the Nucleon (MENU 2010)**, Collage of William and Mary, May 31 – June 4, Williamsburg, Virginia.
Presentation & Poster: *Configuration and calibration of the BigBite spectrometer for the E05-102 experiment.*
- 2009 **Hall A Data Analysis Workshop December 2009**, Thomas Jefferson National Accelerator Facility, December 14th, Newport News, Virginia.
Presentation: BigBite Optics.
- 2008 **Hall A Data Analysis Workshop December 2008**, Thomas Jefferson National Accelerator Facility, December 3rd, Newport News, Virginia.
Presentation: Beam Energy Analysis.
- 2008 **6th physicists Conference in basic research**, DMFA Slovenia and Faculty for mathematics and physics, University of Ljubljana, November 7th, Podčetrtek, Slovenia.
Poster: Measurement of Electroproduction of π^0 near Threshold.

Awards and grants

- 2007 **Faculty Award (Prešeren's Award) for the outstanding diploma thesis.**

Publications

- [1] M. Mihovilovic, *et al.*, *Methods for Optical Calibration of the BigBite Hadron Spectrometer*, Nucl. Instrum. Meth. A **686**, 20 (2012).
- [2] S. Abrahamyan, *et al.*, *Measurement of the Neutron Radius of ^{208}Pb Through Parity-Violation in Electron Scattering*, Phys. Rev. Lett. **108**, 112502 (2012).
- [3] Z. Ahmed *et al.* [HAPPEX Collaboration], *New Precision Limit on the Strange Vector Form Factors of the Proton*, Phys. Rev. Lett. **108**, 102001 (2012).
- [4] D. Androic *et al.* [G0 Collaboration], *Measurement of the parity-violating asymmetry in inclusive electroproduction of π^- near the Δ^0 resonance*, Phys. Rev. Lett. **108**, 122002 (2012).
- [5] M. Mihovilovic [Jlab E05-102 and Hall A Collaboration], *Configuration and calibration of the BigBite spectrometer*, AIP Conf. Proc. **1374**, 463 (2011).
- [6] D. Androic *et al.* [G0 Collaboration], *Transverse Beam Spin Asymmetries at Backward Angles in Elastic Electron-Proton and Quasi-elastic Electron-Deuteron Scattering*, Phys. Rev. Lett. **107**, 022501 (2011).

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- [7] D. Androic *et al.* [G0 Collaboration], The G0 Experiment: Apparatus for Parity-Violating Electron Scattering Measurements at Forward and Backward Angles, Nucl. Instrum. Meth. A **646**, 59 (2011).
- [8] D. Androic *et al.* [G0 Collaboration], Strange Quark Contributions to Parity-Violating Asymmetries in the Backward Angle G0 Electron Scattering Experiment, Phys. Rev. Lett. **104**, 012001 (2010).

Membership

since 2008 **Hall A Collaboration**, *Thomas Jefferson National Accelerator Facility*, Newport News, Virginia.

Languages

Slovenian (native speaker), **English** (advanced), **German** (basic)

Computer skills

C/C++, Pascal, Delphi, Java, Bash, ROOT, HTML, \LaTeX , Linux, MacOS, MS Windows

Miscellaneous

since 2008 Volunteer firefighter in Volunteer Fire Department Ihan

References

assoc. prof. dr. Simon Širca

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