

XXXVI MAZURIAN LAKES CONFERENCE ON PHYSICS

Probing fundamental laws of nature
with exotic nuclei and atoms



September 1-7, 2019
Piaski, Poland

PROGRAM

Sunday, September 1st

OPENING SESSION

20:00–20:10 Conference Opening

20:10–21:00 **Heinz-Eberhard Mahnke**

Virtual unfolding of folded papyri

RECEPTION

Monday, September 2nd

MORNING SESSION

8:30–9:00 **Andreas Bauswein**

Constraints on the nuclear equation of state from the gravitational wave signals of neutron-star mergers

9:00–9:30 **Ani Aprahamian**

High precision mass measurements of nuclei and the neutron star merger

9:30–10:00 **Walter Pettus**

Project 8: Towards the atomic tritium future of neutrino mass measurement

10:00–10:30 **Hideyuki Sakai**

Tri- and tetra-neutron search

COFFEE BREAK

10:50–11:20 **Yasuhiro Sakemi**

Fundamental physics with cold radioactive atoms

11:20–11:50 **Peter Thirolf**

Characterization of the elusive ^{229m}Th isomer - milestones towards a nuclear clock

11:50–12:20 **Marek Pfützner**

Two-Proton Radioactivity – Current status

12:20–12:50 **Jérôme Giovinazzo**

Two-proton radioactivity: the interesting case of ^{67}Kr and further studies

12:50–13:05 **Dinko Atanasov**

Search for physics beyond the Standard Model with radioactive ^{32}Ar beam

LUNCH

14.00–18.00 FREE AFTERNOON

SUPPER

EVENING SESSION

19:00–19:15 **Natalia Sokołowska**

β -delayed proton emission from ^{11}Be

19:15–19:30 **Sara Ziliani**

Spectroscopy of C, N, O, F neutron-rich nuclei with AGATA+PARIS+VAMOS

19:30–19:45 **Onoufriou Sgouros**

Study of the $^6\text{Li}+p$ and $^7\text{Li}+p$ systems in the Continuum Discretized Coupled Channels approach

19:45–20:00 **Konrad Czerski**

Deuteron-Deuteron reaction rates at room temperature: puzzle of cold fusion

20:00–20:15 **Anastasios Kanellakopoulos**

Laser spectroscopy on germanium isotopes at COLLAPSE-CERN

BREAK

20:20–20:35 **Fredrik Parnefjord Gustafsson**

High-precision laser ionization spectroscopy towards ^{100}Sn

20:35–20:50 **Zhengyu Xu**

Beta-decay study on the neutron-unbound states in ^{133}Sn at ISOLDE Decay Station

20:50–21:05 **Monika Piersa**

β -decay studies of neutron-rich ^{135}In , ^{134}In and ^{133}In nuclei

21:05–21:10 **Varvara Lagaki**

MIRACLS: A novel approach for Collinear Laser Spectroscopy

21:10–21:15 **Juan Saiz Lomas**

Towards a more precise measurement of the $Q(2^+)$ in ^{12}C : testing state-of-the-art ab initio theories

21:15–21:20 **Javier Diaz Ovejas**

Halo effects in the low-energy scattering of ^{15}C with heavy targets

21:20–21:25 **Michał Stepaniuk**

Beta delayed neutron measurements of ^{87}Br and ^{87}Kr decay by means of Modular Total Absorption Spectrometer

Tuesday, September 3rd

MORNING SESSION

- 8:30–9:00 **Krzysztof Pachucki**
*Nuclear charge radii from the isotope shift measurements
in ordinary and muonic atoms*
- 9:00–9:30 **Evgeny Epelbaum**
High-accuracy calculation of the deuteron form factors
- 9:30–10:00 **Titus Morris**
Quantum computing
- 10:00–10:30 **Piotr Magierski**
Exotic aspects of superfluid dynamics
- COFFEE BREAK
- 10:50–11:20 **Guillaume Hupin**
Ab initio description of thermonuclear fusion reactions
- 11:20–11:50 **Peter Schwerdtfeger**
*Chemical and physical properties of superheavy elements
from Relativistic Coupled Cluster and Density Functional
Theory*
- 11:50–12:20 **Anastasia Borschevsky**
High accuracy theoretical investigations of heavy elements

12:20–12:50 **Jacek Dobaczewski**

Nuclear magnetic moments and time-odd properties of density functionals

12:50–13:05 **Maciej Konieczka**

Precise calculation of V_{ud} matrix element from $T = 1/2$ mirror nuclei in the DFT-rooted No-Core Configuration-Interaction model

LUNCH

14.00–18.00 FREE AFTERNOON

SUPPER

EVENING SESSION

19:00–19:15 **Paul Garrett**

Shape-coexistence in the Ru isotopes; Multi-spectroscopic study of ^{98}Ru and beyond-mean-field calculations

19:15–19:30 **Andras Sveiczzer**

Studying the exotic decays $^{71}\text{Kr} \rightarrow ^{71}\text{Br}$ and $^{70}\text{Kr} \rightarrow ^{70}\text{Br}$

19:30–19:45 **Magda Zielińska**

Octupole collectivity across the Zr isotopic chain from Coulomb-excitation studies with the Q3D magnetic spectrograph

19:45–20:00 **Silvia Leoni**

Search for shape isomers by using the selectivity of heavy-ion transfer reactions

20:00–20:15 **Zsolt Podolyák**

Neutron-rich nuclei with $N \geq 126$

BREAK

20:20–20:35 **Giulia Gosta**

Isospin symmetry breaking in ^{60}Zn

20:35–20:50 **Petr Veselý**

Natural orbitals in the mean-field and beyond mean-field calculations of nuclei

20:50–20:55 **Paweł Bączyk**

New energy Density Functional from Quark Meson Coupling model

20:55–21:00 **Simone Bottoni**

Exploring the structure of odd-mass isotopes around the ^{132}Sn neutron-rich nucleus

21:00–21:05 **Andrzej Staszczak**

Exotic toroidal nuclei

21:05–21:10 **Terence Vockerodt**

Coupled channel wave-packet dynamics for low-energy heavy-ion collisions

21:10–21:15 **Radu-Emanuel Mihai**

Investigation of $\Delta T=1$ E1 transition strengths in self-conjugate ^{50}Mn

21:15–21:20 **Ryan Llewellyn**

First Measurements of $B(E2)$ s in the $N=Z$ ^{78}Y and ^{80}Zr

Wednesday, September 4th

MORNING SESSION

8:30–9:00 **Michael Wiescher**

Neutron sources for the i -Process

9:00–9:30 **Magne Guttormsen**

Experimentally constrained (n, γ) reaction rates relevant to r -process and i -process nucleosynthesis

9:30–10:00 **Anu Kankainen**

Mass measurements for nuclear astrophysics

10:00–10:30 **Ingo Wiedenhöver**

Measurement of $d+{}^7\text{Be}$ cross sections for Big-Bang nucleosynthesis

COFFEE BREAK

11:50–11:20 **Naoki Fukuda**

Observation of new isotopes and perspectives on RI-beam production in the next decade at RIKEN RI Beam Factory

11:20–11:50 **Gerda Neyens**

Physics with radioactive beams at ISOLDE and HIE-ISOLDE @ CERN

11:50–12:20 **Hideki Ueno**

Nuclear-physics research based on RI spin orientation technique

12:20–12:35 **Rémy Thoër**

*Polarex, a facility for on-line nuclear orientation at Alto :
Multipolarity mixing ratio results*

12:35–12:50 **Jonathan Wilson**

Physics highlights of the nu-ball experimental campaign

12:50–13:05 **Karolina Kolos**

*Precision beta-decay branching ratio measurements for
long-lived fission products*

LUNCH

14.00–18.00 FREE AFTERNOON

SUPPER

EVENING SESSION

19:00–19:15 **Grzegorz Kaminski**

*Recent experimental studies at the ACCULINNA-2 separa-
tor*

19:15–19:30 **Adam Broniš**

*Conversion-electron spectroscopy in the transfermium re-
gion at SHIP*

19:30–19:45 **Grzegorz Jaworski**

*The new neutron detector array NEDA — status and
achievements*

19:45–20:00 **Aleksandra Ciemny**

Exotic decay modes of neutron-deficient silicon isotopes

20:00–20:15 **Barbara Wasilewska**

A study of γ -decay of the collective states in ^{208}Pb excited in (p,p') reaction at the CCB facility

BREAK

20:20–20:35 **Sílvia Viñals Onsès**

Electron capture of ^8B into the highly excited states of ^8Be

20:35–20:40 **Pavol Mosat**

Study of K -isomers in ^{255}Rf

20:40–20:45 **Amelia Kosior**

Skyrme-HFB predictions to shape isomerism in neutron-deficient superheavy $Z=118-124$ isotopes

20:45–20:50 **Piotr Jachimowicz**

Fission properties of actinide nuclei within deformed Woods-Saxon model

20:50–20:55 **Qi Zeng**

Half-life measurement of short-lived $^{94\text{m}}\text{Ru}^{44+}$ using isochronous mass spectrometry

20:55–21:00 **Luke Morris**

Probing superdeformed bands in ^{28}Si using electromagnetic transitions

21:00–21:05 **Magdalena Matejska-Minda**

Investigation of the $K = 3/2^+$ rotational band in ^{45}Sc - revised lifetime of the $11/2^-$ state

21:05–21:10 **Giorgia Pasqualato**

Lifetime measurements in ^{105}Sn : the puzzle of $B(E2)$ and $B(M1)$ strengths in Sn isotopes

21:10–21:15 **Eleonora Teresia Gregor**

Transfer reactions with a helicoidal spectrometer at SPES

21:15–21:20 **Przemysław Sękowski**

Nuclear reactions in human-like tissues during proton therapy

Thursday, September 5th

MORNING SESSION

8:30–9:00 **Hiromitsu Haba**

Present status and perspectives of superheavy element researches at RIKEN

9:00–9:30 **Michael Block**

Precision measurements of nuclear properties of No, Lr and Rf isotopes at GSI / SHIP

9:30–10:00 **Katsuhisa Nishio**

Fission studies using multi-nucleon transfer reactions

10:00–10:20 **Michał Kowal**

Multi-quasiparticle excited states in superheavy nuclei

10:20–10:35 **Janusz Skalski**

Fission of odd \mathcal{E} odd-odd nuclei and isomers

COFFEE BREAK

10:55–11:25 **Bertis Rasco**

The latest decay heat, $\bar{\nu}$, and β -delayed neutron results from the Modular Total Absorption Spectrometer

11:25–11:55 **Robert Grzywacz**

Toward complete studies of beta-delayed neutron emitters

11:55–12:25 **Marek Płoszajczak**

Toward the understanding of near-threshold collectivity

12:25–12:45 **Michał Ciemala**

Lifetime measurements of excited states in neutron-rich C and O isotopes as a test of the three-body forces

12:45–13:00 **Raul de Diego**

Two- and three-body observables in breakup reactions of halo nuclei

13:00–13:15 **Antonio Cacioli**

Study of the $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ at LUNA

LUNCH

14:00–18:00 FREE AFTERNOON

SUPPER

EVENING SESSION

19:00–21:00 POSTER SESSION

21:00– CAMPFIRE

Friday, September 6th

MORNING SESSION

- 8:30–9:00 **Calin Alexandru Ur**
Exploring the intimate structure of matter at ELI-NP
- 9:00–9:30 **Thomas Elias Cocolios**
Tb-IRMA-V: Terbium ISOL Radioisotopes for Medical Applications in Flanders
- 9:30–10:00 **Nicholas Scielzo**
Nuclear-data needs for applications
- 10:00–10:30 **Marek Lewitowicz**
European strategy for nuclear physics

COFFEE BREAK

- 10:50–10:55 **T. Czosnyka Prize Ceremony**
- 10:55–11:25 **Katarzyna Wrzosek-Lipska**
Shape coexistence studied with Coulomb excitation in the $N\sim 104$ and $N\sim 60$ regions
- 11:25–11:40 **Best Poster Award**
- 11:40–11:50 **Z. Szymański Prize Ceremony**
- 11:50–12:20 **Javier Menéndez**
Nuclear structure theory for double-beta decay and the interaction of nuclei with dark matter

12:20–13:05 **Witold Nazarewicz**

Nuclear theory challenges

LUNCH

14.00–16.30 FREE AFTERNOON

SUPPER

EVENING SESSION

17:00–18:30 **Camerata String Quartet Concert**

20:00– **Conference dinner**

POSTER PRESENTATIONS

ID	Author	Title
A00	Jarosław Choiński	<i>Cyclotron Production of ^{135}La as Auger Electron Emitter</i>
A01	Ewa Adamska	<i>Structure of ^{85}Se</i>
A02	Matthew Barton	<i>Pairing dynamics in low energy nuclear collisions</i>
C01	Paweł Bączyk	<i>New energy Density Functional from Quark Meson Coupling model</i>
C02	Olga Beliuskina	<i>Production and studies of neutron-rich nuclei at IGISOL</i>
A03	Andrey Bezbakh	<i>Study of ^{10}Li low energy spectrum in the $^2\text{H}(^9\text{Li},\text{p})$ reaction</i>
B01	Anna Bezbakh	<i>Investigation of level density parameters of superheavy nuclei</i>
D01	Dominik Boehm	<i>New methods for nuclear waste treatment of the dual fluid reactor concept</i>
A05	Simone Bottoni	<i>Exploring the structure of odd-mass isotopes around the ^{132}Sn neutron-rich nucleus</i>
A06	Tomasz Cap	<i>The time scale of the neck fragmentation process in $^{197}\text{Au} + ^{197}\text{Au}$ collisions at the bombarding energy of 23A MeV</i>
D02	Vittoria Capirossi	<i>Thickness and uniformity characterization of thin targets for intense ion beam experiments</i>
D03	Pietro Carra	<i>The FragmentatiOn Of Target (FOOT) experiment and first results with the ΔE-TOF detector</i>
A07	Aleksandra Ciemny	<i>β-decay of ^{58}Zn</i>
A08	Giulia Colucci	<i>Study of sub-barrier fusion of $^{36}\text{S} + ^{50}\text{Ti}$, ^{51}V systems</i>

- A09 **Cristian Costache** *Precision fast-timing measurements in neutron-deficient Po isotopes at IFIN-HH*
- A10 **Cristian Costache** *Fast-timing studies in $^{214,216,218}\text{Po}$ following the β decay of $^{214,216,218}\text{Bi}$ isotopes at the ISOLDE Decay Station*
- A11 **Javier Diaz Ovejas** *Halo effects in the low-energy scattering of ^{15}C with heavy targets*
- D04 **Aleksandra Fijałkowska** *Beta-delayed neutron detection via time of flight technique*
- D05 **Eleonora Teresia Gregor** *Transfer reactions with a helicoidal spectrometer at SPES*
- A12 **Wenxue Huang** *Monte-Carlo simulation of ion distributions in a gas cell for multinucleon transfer reaction products from Xe+Pt and U+U reactions*
- A13 **Łukasz Iskra** *Study of neutron-rich yttrium isotopes produced in fission induced by cold neutrons with new FIPPS array and LOHENGRIN mass spectrometer*
- B02 **Piotr Jachimowicz** *Fission properties of actinide nuclei within deformed Woods-Saxon model*
- D06 **Marek Karny** *New Central module for the Modular Total Absorption Spectrometer*
- D07 **Adam Konefał** *Radioactivity induced in new generation cardiac implantable electronic devices during high-energy X-ray irradiation*
- B03 **Amelia Kosior** *Skyrme-HFB predictions to shape isomerism in neutron-deficient superheavy $Z=118-124$ isotopes*
- B04 **Agata Kowalska** *Deviations from Poisson statistics observed in chromosome aberrations induced by ^{252}Cf neutrons*
- D08 **Wojciech Królas** *Facilities for complementary experiments at the IFMIF-DONES fusion neutron source laboratory*

- C03 **Adam Kubiela** *Study of nuclei around ^{54}Zn using Optical Time Projection Chamber*
- A27 **Rinku Kumar Prajapat** *Signature of incomplete fusion in the ^7Li induced reaction on ^{nat}Zr at low energies*
- A28 **Rinku Kumar Prajapat** *Investigation of preequilibrium strength in ^7Li , ^{11}B and ^{12}C induced reactions*
- D09 **Varvara Lagaki** *MIRACLS: A novel approach for Collinear Laser Spectroscopy*
- A14 **Ryan Llewellyn** *First Measurements of $B(E2)$ s in the $N=Z$ ^{78}Y and ^{80}Zr*
- B04 **Ruchi Mahajan** *Mass-gated neutron multiplicity measurement for $^{48}\text{Ti}+^{144,154}\text{Sm}$ reaction using NAND facility*
- A15 **Magdalena Matejska-Minda** *Investigation of the $K = 3/2^+$ rotational band in ^{45}Sc - revised lifetime of the $11/2^-$ state*
- A16 **Bakytbek Maueyev** *Investigation of deuteron scattering from ^{13}C at low energy*
- A17 **Radu-Emanuel Mihai** *Investigation of $\Delta T=1$ $E1$ transition strengths in self-conjugate ^{50}Mn*
- A29 **Natalia Młyńczyk** *Production of the new radioisotope ^{117m}Sn for laboratory tests and the future application in nuclear medicine*
- A18 **Tamara Milanović** *Evolution of collectivity around $N=40$: Lifetime measurements in $^{73,75}\text{Ga}$*
- A19 **Luke Morris** *Probing superdeformed bands in ^{28}Si using electromagnetic transitions*
- A20 **Pavol Mosat** *Study of K -isomers in ^{255}Rf*
- A21 **Yerzhan Mukhamejanov** *Development of automatic system for determination of moisture content in snow and soil moisture by neutron component of cosmic rays*

- A22 **Yerzhan Mukhamejanov** *Investigation of preequilibrium emission of protons from (p,xp) reaction with ^{103}Rh nucleus*
- A23 **Yerzhan Mukhamejanov** *Study of the $^9\text{Be}(d,d)^9\text{Be}$, $^9\text{Be}(d,d')^9\text{Be}$, $^9\text{Be}(d,t)^8\text{Be}$, $^9\text{Be}(d,a)^7\text{Li}$ reactions in interaction of deuterons with ^9Be nuclei at energy $E_{d,\text{lab}} = 14.5\text{ MeV}$*
- A24 **Natalia Oreshkina** *Fine and hyperfine structure of heavy muonic atoms: Towards the determination of nuclear parameters*
- B05 **Michał Palczewski** *Sizes and shapes of very heavy nuclei in high-K states*
- A25 **Giorgia Pasqualato** *Lifetime measurements in ^{105}Sn : the puzzle of B(E2) and B(M1) strengths in Sn isotopes*
- D10 **Lukas Pašteka** *Material size dependence on fundamental constants*
- D11 **Federico Pinna** *Tests of a cooling system for thin targets submitted to intense ion beams for the NUMEN experiment*
- A26 **Jan Pokorný** *Application of equation of motion phonon method in the medium-mass hypernuclei*
- A29 **Kavita Rani** *Study of coupling in $^{28}\text{Si}+^{144}\text{Sm}$ through quasi-elastic measurements*
- A30 **Juan Saiz Lomas** *Towards a more precise measurement of the $Q(2^+)$ in ^{12}C : testing state-of-the-art ab initio theories*
- D12 **Przemysław Sękowski** *Nuclear reactions in human-like tissues during proton therapy*
- A31 **Odile Smits** *Impact of nuclear charge densities on the electronic shell structure for the superheavy elements*
- A32 **Arshiya Sood** *Evidence of narrow range high spin population in incomplete fusion*
- A33 **Anamaria Spătaru** *Production of exotic nuclei via multi-nucleon transfer reactions inside gas cells*

- C04 **Andrzej Staszczak** *Exotic toroidal nuclei*
- A34 **Michał Stepaniuk** *Beta delayed neutron measurements of ^{87}Br and ^{87}Kr decay by means of Modular Total Absorption Spectrometer*
- A35 **Albert Szadziński** *Simulation of Star configurations in BINA detector*
- D13 **Jerzy Szerypo** *Technological Laboratory (LMU Munich) – status*
- C05 **Natalia Targosz-Slecza** *Consequences of target material crystal lattice defects on nuclear reaction rates*
- D14 **Yulin Tian** *A multi-reflection time-of-flight mass analyzer for SHANS at IMP/CAS*
- A36 **Volodymyr Uleshchenko** *Energy and mass dependencies of the ^9Be global optical potential*
- A37 **Terence Vockerodt** *Coupled channel wave-packet dynamics for low-energy heavy-ion collisions*
- D15 **Patryk Wojtowicz** *Warsaw time-of-flight neutron detector*
- A38 **Dominika Wójcik** *Λ and ϕ as a potential sources of K^- meson emission in heavy-ion collisions around kaon threshold*
- A39 **Gani Yergaliuly** *Study of the elastic scattering of ^{10}B ions on ^{12}C nuclei at an energy of 17.5 MeV*
- D16 **Andrei Zaitsev** *Multiple fragmentation of relativistic nuclei in nuclear track emulsion*
- D17 **Qi Zeng** *Half-life measurement of short-lived $^{94m}\text{Ru}^{44+}$ using isochronous mass spectrometry*
- Zygmunt Patyk** *β decay studies of $^{148-150}\text{Ba}$ isotopes*