

ISINN-30 Preface

The anniversary 30th International Seminar on Interaction of Neutrons with Nuclei: “Fundamental Interactions & Neutrons, Nuclear Structure, Ultracold Neutrons, Related Topics” (ISINN-30) was held in a hybrid format on April 14–18, 2024 simultaneously in Sharm El Sheikh (Egypt) and Huzhou (China). It was co-organized by Frank Laboratory of Neutron Physics of Joint Institute for Nuclear Research (FLNP, JINR), the Egyptian Academy of Scientific Research and Technology (ASRT), Egyptian Atomic Energy Authority (EAEA) and XJTU-Huzhou Neutron Science Lab of Xi’an Jiaotong University (XJTU). For the first time, the ISINN conference was held in Egypt, and organized in cooperation with ASRT and EAEA.

Head of the FLNP JINR Nuclear Division, co-chairman of the organizing committee of the event Valery Shvetsov gave an introductory speech. He discussed the history of the annual International Seminar and emphasised the importance of such events in the development of international scientific relations. ASRT President Gina El-Feky, EAEA Chairperson Amr El-Hag Ali, XJTU Professor Sheng Wang, and Academician of the Chinese Academy of Sciences Chen Hesheng (CSNS, IHEP CAS) also welcomed the participants of the event. The co-chairmen of the organizing committee began the conference by expressing their pleasure at meeting everyone at the milestone ISINN-30, which was hosted in Sharm El Sheikh for the first time.

The scientific programme of the first day started with the report of the former President of ASRT, Professor of Cairo University Tarek Hussein “What is after Egypt being full member at JINR?” outlining the prospects and directions of scientific cooperation with the Joint Institute. FLNP JINR Director Egor Lychagin spoke about achievements and results of the Laboratory’s neutron research, Academician Chen Hesheng talked about the progress of CSNS, and Professor Sheng Wang presented the development status and prospects of boron neutron capture therapy.

The annual conference attracts experienced and young scientists from around the world. More than **200** participants took part in the Seminar onsite in Sharm El Sheikh (**75**), Huzhou (**48**) and online (**85**) from more than **65** institutes and universities of Austria, Azerbaijan, Bangladesh, Belarus, Bulgaria, China, Czech Republic, Egypt, France, Georgia, India, Indonesia, Iran, Japan, Kazakhstan, Moldova, Mongolia, Poland, Romania, Russia, Saudi Arabia, Serbia, South Africa, Spain, Sri Lanka, Tunisia, Turkey, UK, United Arab Emirates, USA, Uzbekistan, Vietnam.

The setting of the Seminar, which was welcoming and cordial, encouraged the sharing of fresh insights and concepts as well as the establishment of new contacts. The Seminar program traditionally includes presentations of the new results obtained in the fields of fundamental properties of the neutron, fundamental interactions and symmetries in neutron induced reactions, properties of compound states, nuclear structure, intermediate and fast neutron induced reactions, nuclear fission, nuclear data for applied and scientific purposes, neutron detection and methodical aspects, physics of ultracold neutrons, nuclear and related analytical techniques in environmental and material sciences, neutron radiation effects, nuclear reactor physics, radiation transportation and simulation, advanced neutron sources and perspective experiments.

As part of the Seminar, ISINN-30 Organizing Committee and representatives of the State Key Laboratory of Intense Pulsed Radiation Simulation and Effect (SKLIPRSE) of the Northwest Institute of Nuclear Technology (NINT, China) discussed issues of cooperation and the possibility of their participation as co-organizers and coordinators in the future Seminars. Cooperation issues also discussed with representatives of the China Institute of Atomic Energy (CIAE), the Leading Laboratory of Modern Nuclear Energy and Industry of Shaanxi (XJTU, China) and the Institute of High Energy Physics (IHEPCAS, China).

During the Seminar, 4 plenary, 18 invited, 115 oral and 31 poster presentations were presented (for more details, see <http://isinn.jinr.ru/past-isinns/isinn-30/program.html>). Also, the conference's agenda was supplemented by a historical review related to the 30th anniversary of the Seminar.

This year, the Organizing Committee proposed to publish the conference proceedings as original scientific papers in the journal Physics of Elementary Particles and Atomic Nuclei, Letters (PEPAN Letters). Therefore, only proceedings that went beyond the journal's topics or were sent directly for publishing in this book are covered in it. Nevertheless, we are greatly appreciative of each participant's valuable contribution to the 30th anniversary of the Seminar! Since a whole number of proceedings may appear neither in this book nor in the journal, we include a list of the key presentations and corresponding names of the invited speakers below.

Alexander Frank *“Direct measurement of the neutron velocity in a refractive medium and test of the dispersion law for UCN”*;

Atsushi Taketani *“Water movement observation in corroded steel by thermal neutron imaging”*;

Dimitar Tonev *“Nuclear structure investigations in light nuclei”*;

Dmitry Kamanin *“Observation of fission isomers among fragments of spontaneous and induced fission of heavy nuclei”*;

Guangchun Zhang, Zhifeng Li *“The 2D/3D method of characteristics for nuclear reactor whole core neutron transport computation”*;

Hanxiong Huang *“The PFNS measurement in CIAE”*;

Inga Zinicovscaia *“Neutron activation analysis and complementary techniques in environmental studies”*;

Jianxing Li *“Strong laser driven vortex gamma photons and photonuclear reactions”*;

Marina Frontasyeva *“Atmospheric deposition of cosmic dust studied by the moss and trepel analyses”*;

Mohamed Soliman *“Neutron activation analysis Lab at ETRR-2: achievements and future work”*;

Qingming He *“The status and development of the hybrid Monte-Carlo-deterministic particle-transport code NECP-MCX”*;

Ruirui Fan *“Operation and experimental introduction of the CSNS back-n white neutron facility”*;

Sergey Taskaev *“Measurement of cross-section of the $p+{}^7\text{Li}$, $d+{}^7\text{Li}$, $p+{}^{11}\text{B}$, and $d+{}^{\text{B}}$ reactions at ion energies up to 2.2 MeV”*;

Shuhuan Liu *“Investigation on the development of the intelligent radiation detection techniques in extreme environment”*;

Wen Luo *“ ${}^{233}\text{Pa}(n, \gamma)$ cross section extraction using the surrogate reaction ${}^{232}\text{Th}({}^3\text{He}, p){}^{234}\text{Pa}^*$ involving spin-parity distribution”*;

Xichao Ruan *“Progress of nuclear data measurement at CIAE”*;

Yuri Kopatch *“Applications of the tagged neutron method for fundamental and applied research”*;

Zujun Wang *“Radiation effects on CCDs induced by neutron beams at atmosphere neutron irradiation spectrometer of CSNS”*.

The decision to hold ISINN-30 in Egypt, a recently admitted JINR Member State, will undoubtedly advance basic and applied research in Egypt and draw in young, motivated individuals to the scientific community. The seminar's success has shown once again that its format is beneficial for discussing ongoing work and forming new working collaborations, in addition to presenting outcomes.

Co-chairman of the Organizing Committee

V.N. Shvetsov

Co-director of the Organizing Committee

W.I. Furman