Information System for the Tasks of Radiation Biology (ISRB2020)

The 1st workshop on Information System for the Tasks of Radiation Biology Workshop (ISRB2020) is focused on the creation of an information system for analyzing behavioural and pathomorphological changes in the central nervous system in the study of the effects of ionizing radiation and other factors on biological objects.

The information system is based on computer vision algorithms within machine and deep learning technologies, modern IT solutions for data storage, processing and visualization. The information system will allow scientists to accelerate and simplify work with experimental data for different research groups, as well as to elaborate effective methods of prevention and protection from ionizing radiation. The information system is being created on the basis of the HybriLIT heterogeneous platform of JINR.

The workshop was held June 18, 2020 at the Joint Institute for Nuclear Research in Dubna.

Editors:

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Program Committee:

- **LIT JINR:** D.V. Podgainyi, O.I. Streltsova, A.V. Stadnik, A.V. Nechaevsky, Yu.A. Butenko, A.S. Bulatov, A.I. Anikina, D.M. Marov
- **LRB JINR:** I.A. Kolesnikova, M.G. Lalkovičová, K.N. Lyakhova, Yu.S. Severuikhin, D.M. Utina
- **SAP SE, Germany:** A.I. Streltsov

Workshop programme:

1. **I.A. Kolesnikova** (LRB JINR)
   Setting tasks for the development of an information system to analyze morphofunctional changes in the central nervous system when studying the effects of ionizing radiation and other damaging factors.
2. **Yu. S. Severuikhin** (LRB JINR)
   Noldus Ethnovision XT for the analysis of behavioral responses of small laboratory animals.
3. **Yu. A. Butenko** (LIT JINR)
   Development of a service for conducting radiobiological studies on the HybriLIT platform.
4. **D. M. Marov** (LIT JINR, State University "Dubna")
   Development of a web service for analyzing functional and morphological changes in the central nervous system of irradiated animals.
5. **A. V. Stadnik** (LIT JINR)
   Algorithms for image segmentation based on the neural network approach in the study of morphofunctional changes in the central nervous system.
6. **A. S. Bulatov** (LIT JINR, State University "Dubna")
   Algorithms of computer vision for the analysis of behavioral responses of small laboratory animals.
7. **M. I. Zuev** (LIT JINR)
   System for storing and analyzing experimental MRI/fMRI data on the hybrilit heterogeneous platform.

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