Symposium on Nuclear Data 2020

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The Symposium on Nuclear Data 2020 (SND2020) was held on November 26–27, 2020 at the RIBF conference room as an on-site venue, combined with online connections. This symposium originated from the first conference[1] held in 1978 under the auspices of the Japan Atomic Energy Research Institute (JAERI) and Japanese Nuclear Data Committee (Sigma Research Committee) and has been held almost every year since. The Nuclear Data Division (NDD) of the Atomic Energy Society of Japan (AESJ) took over the organization of this symposium in 2006. Since then, the symposium has been organized by an executive committee of the Nuclear Data Division. In practice, it has been hosted in turn by JAEA, domestic universities, or other research institutes every fiscal year.

In 2020, RIKEN Nishina Center hosted the symposium for the first time, in order to plant the seeds for cross-disciplinary research, to promote new collaborations, and to expand the possibility of collaborations. For the effective functioning of the symposium, CNS (U-Tokyo), WSNC (KEK), and the University of Tokyo were asked to co-host the event, and these institutes formed the local organizing committee.

The symposium consisted of 16 invited talks, 2 tutorial lectures, and 26 poster presentations, followed by an RIBF facility tour. The full program and abstracts of the symposium are available on the SND2020 webpage.[2] The invited talks covered recent topics and progress in nuclear data activities and consisted of five sessions: 1) accelerator facilities and nuclear data, 2) fission and heavy-ion nuclear spectroscopy, 3) nuclear reaction, 4) nuclear medicine and pharmacology, and 5) deep learning or machine learning, and its application to nuclear physics and nuclear data. A feature of this year's symposium was the inclusion of a session on machine learning. Machine learning is expected to play an important role in the next decade for nuclear physics and nuclear data, where multiple variables are handled and analyzed from raw or processed data. An introduction to the fundamentals of deep learning was provided including its origins, history of development, and relationship with computing power, The session carefully examined the capabilities of deep learning, examples of common pitfalls, and expectations for the future.

The two tutorial lectures were dedicated to the basic theory and actual operation of nuclear reactors. The lectures aimed to explain how nuclear reactors are established as macroscopic systems, so that even nuclear physics researchers, who usually understand physical phenomena from a microscopic perspective, could understand them. It is uncertain whether the aims were fully achieved, but such efforts are believed to be worthwhile.

Fig. 1. Symposium photo of on-site participants in front and on-line participants on screen.

Poster presentations were held using the break-out room function of the Zoom web meeting tool. This was necessary to prevent cluster outbreaks of COVID-19 that can potentially be introduced by face-to-face discussions. Therefore, not only on-site participants but also online participants presented their posters remotely. The posters themselves were located on the wall at the on-site conference room. Therefore, the on-site participants were able to examine the posters not only during the poster session, but also during coffee breaks.

Figure 1 shows a group photograph of both on-site and online participants of the symposium. Despite the COVID-19 pandemic, which restricted public access, 62 on-site participants visited RIKEN Wako campus. Together with 59 online participants, a total of 121 researchers and students joined the symposium. The Zoom web meeting tool was utilized not only for the poster session but also for several oral presentations. The on-site presentations were distributed via Zoom, and the remote presentations were shown on the screen at the conference room. Therefore, this conference was held in the hybrid model of on-site and remote participation. This model will be followed in the future as well. The next year's symposium will be hosted by J-PARC.

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References

1) Proc. the 1978 Seminar on Nuclear Data, https://inis.iaea.org/collection/NCLCollectionStore/_Public/11/537/11537325.pdf.
2) https://indico2.riken.jp/e/snd2020.