Editorial Proc. UCANS-web Conference, Nov. 30–Dec. 3 2020

Compact accelerator-based neutron sources (CANS) represent a growing technology to provide neutrons in many areas of research and applications. Based on nuclear processes initiated by low energy proton or deuteron beams or the nuclear photo effect using electron beams, very compact neutron sources have been designed and installed at universities, research institutes, and industrial sites accross the globe. These small sources have provided continuous impact in fundamental nuclear physics as well as in material sciences, engineering, metrology or health. In most recent years partly driven by the advent of reactor based neutron sources and the desire for local and mobile neutron sources and partly by progress in high current proton accelerator systems, efforts are increasing to develop, design and construct very powerful CANS. One goal of these efforts is to provide future mid- and large-scale neutron sources complementary to spallation and reactor based sources, while another is to provide local services for industry or health e.g. as neutron imaging services or with boron neutron capture therapy to fight cancer.

The Union for Compact Accelerator-driven Neutron Sources (UCANS) is organizing regular meetings to discuss the state of the art and developments on this topic. The UCANS9 conference was planned to be held in Wako, Japan in November 2020. Due to the global coronavirus outbreak the conference could not happen and was postponed to a future date in 2021. As an intermediate activity a web-based meeting was organized termed UCANS-web Conference and held from Nov. 30 to Dec. 3 2020 with a world-wide attendance of many scientists and researchers.

The virtual conference covered a very wide range of topics on most aspects of compact sources, accelerators, targets, moderators, detectors, neutron scattering, radiography, isotope and nuclear data, medical applications as documented at the conference website (ucans-web.org). The diverse and varied presentations and discussions at this virtual meeting inspired the participants and organizers to publish presented work within a proceedings volume in the Journal of Neutron Research.

The present contributions deal with basic nuclear data evaluation by improved scattering kernels, the development of versatile beam monitoring and multiplexing systems as well as the design and configuration of optimized target-moderator combinations to improve neutron flux. They further present novel instrumentation concepts and the plans and outlines for novel CANS facilities.

Although these articles represent only a fraction of all of the presented contributions within the UCANS-web Conference, they demonstrate the progress and state-of-the-art in this fast-emerging field. Upcoming conferences, workshops and UCANS meetings will show further progress and developments and the present proceedings will support all these discussions and activities to develop and optimize CANS.

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