

*The Union for Compact Accelerator-driven  
Neutron Sources (UCANS)*

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**ERANS**  
RIKEN Accelerator-driven  
compact Neutron Sources

## A flexible target station for Hi-CANS

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The advent of high-current accelerator systems launched the development of high-current accelerator-driven neutron sources (Hi-CANS) utilizing low energy nuclear reactions. This development can counteract the increasing shutdown of existing fission-based neutron sources and a resulting decline in available neutron beam days as well as establishing Hi-CANS as the next generation of national neutron sources.

A main component of a Hi-CANS is the target station used to convert protons into neutrons, to moderate the neutrons to the required energy in the meV range, extract the neutrons to the instruments with the proper phase space volume as well as to shield the surrounding equipment.

Within the High-Brilliance neutron Source (HBS) project, we are developing three target stations operated with a short pulse, medium pulse, and long pulse proton beam. The target stations have target / moderator / reflector geometries optimized to the specific proton beam structure allowing to provide tailored neutron beams to each individual neutron instrument. For this, a basic target station setup is used where just the core is modified to fulfill the specific requirements. Such a base layout of the target station reduces cost and effort and allows interchangeable components making it highly modular and versatile.

At UCANS 9, we will present the general design ideas of such a Hi-CANS target station and show the flexibility it offers.