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## OR31 - Development and operation of a compact, electron accelerator-driven neutron facility AISTANS at AIST, Japan

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A compact, electron accelerator-based neutron facility has been developed and is now operational at AIST (National Institute of Advanced Industrial Science and Technology) in Tsukuba, Japan. The facility is called AISTANS (Analytical facility for Industrial Science and Technology using Accelerator based Neutron Source)[1,2] and began operations in 2020. AISTANS uses a S-band linear electron accelerator to irradiate a water-cooled tantalum target. The accelerator operates with an electron beam energy of 40 MeV and is designed to deliver a beam power on the target of up to 10 kW (250 mA, 10 micro pulse length at a repetition rate of 100 Hz). The neutrons are cooled via solid-methane moderators and two separate beamlines are available for measurements. AISTANS is particularly suited for neutron transmission imaging (e.g., Bragg-edge imaging) of large samples. All aspects of the initial design, installation, commissioning and now operation of the AISTANS facility were conducted by our small team at AIST, based on our experiences running a similar electron accelerator to produce positrons (also operated by our group at AIST[3]) and with the electron accelerator-based neutron source at Hokkaido University (HUNS)[4]. In this contribution I will outline the AISTANS facility in more detail with emphasis on the accelerator operations and the challenges of operating the facility with limited manpower. This is based on results obtained from a project commissioned by the New Energy and Industrial Technology Development Organization (NEDO). [1] K. Kino et al., Nuclear Instruments and Methods in Physics Research A 927 (2019) 407 [2] B.E. O'Rourke et al., Nuclear Instruments and Methods in Physics Research B 464 (2020) 41 [3] B.E. O'Rourke et al., JJAP Conf. Proc. 2 (2014) 011304 [4] M. Furusaka et al., Phys. Procedia 60 (2014) 167

**Presenter:** O'ROURKE, Brian (AIST)

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