Contribution ID: **1958** Contribution code: **THPA100** Type: **Poster Presentation**

An advanced digital feedback control system design for the muon linear accelerator

Thursday 11 May 2023 16:30 (2 hours)

A unique muon linear accelerator (linac) for the muon g-2/EDM experiment at J-PARC is under development. Digital feedback (DFB) design employed in a low-level radio frequency (LLRF) control system is crucial to fulfilling the required RF amplitude and phase specifications in the RF cavities for a stable and continuous acceleration of the whole bunched particles. To this end, a micro telecommunications computing architecture.4 (MicroTCA.4)-based compact and in-house DFB design, using Vadatech commercial off-the-shelf (COTS) RF system-on-chip (RFSoC) advanced mezzanine card (AMC), is aimed for the muon linac. This feedback control system will employ a direct sampling method that reduces the project cost by requiring less hardware employment for ultra-high frequency (UHF) and L-band accelerating structures. The present status and first results of the project will be reported in this paper.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: CICEK, Ersin (High Energy Accelerator Research Organization)

Co-authors: EGO, Hiroyasu (High Energy Accelerator Research Organization); FUTATSUKAWA, Kenta (High Energy Accelerator Research Organization); HAYASHIZAKI, Noriyosu (Research Laboratory for Nuclear Research); IBARAKI, Yuka (Nagoya University); IINUMA, Hiromi (Ibaraki University); IWATA, Yoshiyuki (National Institute of Radiological Sciences); KITAMURA, Ryo (Japan Proton Accelerator Research Complex (J-PARC)); KONDO, Yasuhiro (Japan Atomic Energy Agency); MIBE, Tsutomu (High Energy Accelerator Research Organization); MORISHITA, Takatoshi (Japan Atomic Energy Agency); NAKAZAWA, Yuga (Ibaraki University); OTANI, Masashi (High Energy Accelerator Research Organization); SAITO, Naohito (High Energy Accelerator Research Organization); SUE, Yuki (Nagoya University); SUMI, Kazumichi (Nagoya University); TAKEUCHI, Yusuke (Kyushu University); YOSHIDA, Mitsuhiro (High Energy Accelerator Research Organization); YOTSUZUKA, Mai (Nagoya University)

Presenter: CICEK, Ersin (High Energy Accelerator Research Organization)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T27: Low Level RF