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Utilization of remote monitoring tools in the long-term operation of the superconducting linac at RIKEN

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Compared to normal-conducting accelerators, superconducting linacs require a dramatically larger number of parameters to be monitored, including not only RF power and beam-related signals, but also cryogenic conditions such as helium tank pressure, vacuum levels, and cavity temperatures. This increased complexity demands robust and flexible monitoring systems, especially during extended operation over several consecutive months.

At RIKEN superconducting heavy-ion linac (SRILAC), EPICS (Experimental Physics and Industrial Control System) serves as the main control framework, providing standard GUI tools such as control panels and archive viewers. However, as the scale and duration of operation have grown, the need for more accessible and responsive monitoring solutions has become apparent.

To meet this need, we have developed web-based applications using Ajax, React, and D3.js. These tools provide real-time access to trend graphs, Machine Protection System (MPS) alarm status, and control screen streaming —all through a standard web browser. This setup enables accelerator staff to monitor system conditions not only from the control room, but also from offices, labs, or even from home. We report on how these tools have proven useful in maintaining effective monitoring during the long-term operation of SRILAC.

I have read and accept the Privacy Policy Statement

Yes

Footnotes

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