Beam profile monitor system in the extraction channels of the Nuclotron–NICA complex using proportional ionization chambers and the HOROCYCLE SCADA system.

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Proportional ionization chambers have been designed and manufactured for monitoring heavy ion beams in the transfer channel from the Nuclotron synchrotron to the NICA collider at JINR. Nine stations are installed along the line: two on the northern branch to the collider, five on the southern branch, one before the beam splitting point, and one portable unit, providing flexible coverage of the extracted beam section. The proportional chambers measure horizontal and vertical beam profiles in a pulsed extraction mode, allowing a detailed characterization of the transverse structure of the heavy ion beams. Data acquisition and control of the high-voltage power supply, detector positions, and working gas mixture are integrated into a dedicated SCADA system that provides unified control of the diagnostics infrastructure. The system has demonstrated reliable performance in commissioning runs and has been successfully used to tune the extraction and transport of the beam into the collider, thereby supporting stable operation of the NICA complex.