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Status of oscillating arm wire monitor development

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Oscillating arm wire monitors are in use at PSIs HIPA facility since the 1970s. Molybdenum wires or foils, carbon fibres, or tungsten blades are passed through the proton beam in the 0.87 MeV, 72 MeV and 590 MeV beam lines to measure secondary electron emission current. We are developing an improved monitor to serve in the new proton beam lines of the IMPACT project, as spares, and later as replacement. The new monitor retains the basic mechanical concept, but at increased wire speeds. This will allow to measure at full beam current even at low beam energy. Further it will reduce the beam losses during the wire passing as well as the resulting need to temporarily increase the interlock levels of the beam loss monitors at higher energies. A prototype is under construction, which allows to test a low inertia setup with stepper and DC motors and eventually gears using optimized speed trajectories and to compare it with simulations. The performance of the light-weight arm, the bellow and other mechanics, potentiometer, resolver, and end switches will be studied.

We discuss the mechanical setup, the manufacturing of the arm, simulations, the test setup, and first measurement results.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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