PAUL SCHERRER INSTITUT



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RRL Wagon B – preliminary results

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Motivation for installation on wagon B:

- RRL Wagon A carbon fibers often break in such a way that there is no electrical signal but they remain in place and cross the beam
- When crossing the beam they generate high-energy scattered particles, which are seen by ionization chambers
- However a IC registers sum of signals from one vertical and 3 tilted wires - difficult to interpret
- Use wagen B to install electrically disconnected thin target Constraint:
- Cannot "stretch" a wire across the aperture: target must be fixed on one side

Idea:

- Find a shape which is relatively resistant to vibrations and can be attached to single chariot



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Idea:

- Find a shape which is relatively resistant to vibrations, can be attached to single chariot and produces useful signal
- Also install ionization chamber which can cover the whole radius of RRL movement (i.e. radius of Ring Machine)



LION (Long Ionization Chamber)





When using concentric cable as ionization chamber it is good to have bias and read signals from central conductor beacuse:

- Safety: not easy to touch central conductor
- Signal quality: central conductor is shielded from EMI by external conductor

Therefore:

- We need current meter which can be biased by 200-300 V
- Libera has one, with e.g. 1 KHz data readout:













Preliminary results using FIR filter



Ongoing work on filter artefacts, reconstruction quality, etc, etc.

Many thanks to: Martin, Simon, Raphael, Hubert

(there were many issues with driving Wagon B)

Next test: 100-200 µA beams, look for potential damage during Servicetag



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Conclusions: Wagon B with U-shape target can provide beam profile measurement.

It resists RF, however it cannot be used with full beam current (limit probably about 400 μA).





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My thanks go to

- Name •
- Name •
- Name •



