

Diagnosics for SPS beam dump (SBDS) EN/STI requirements

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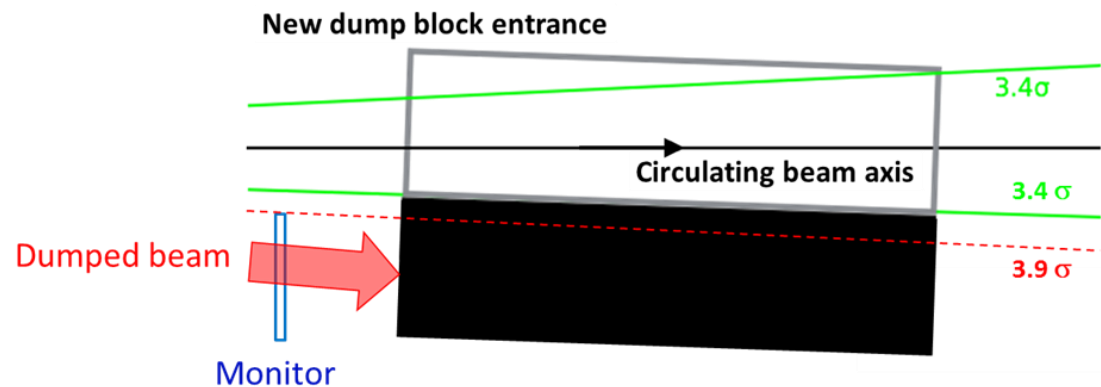
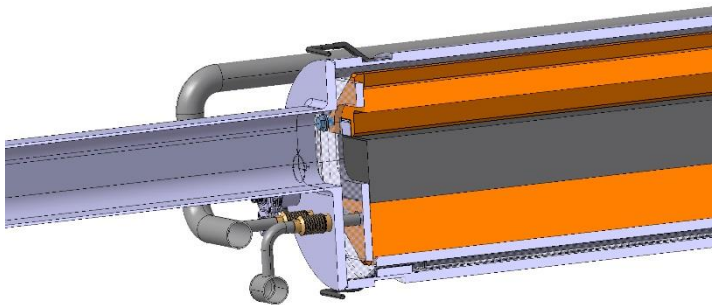
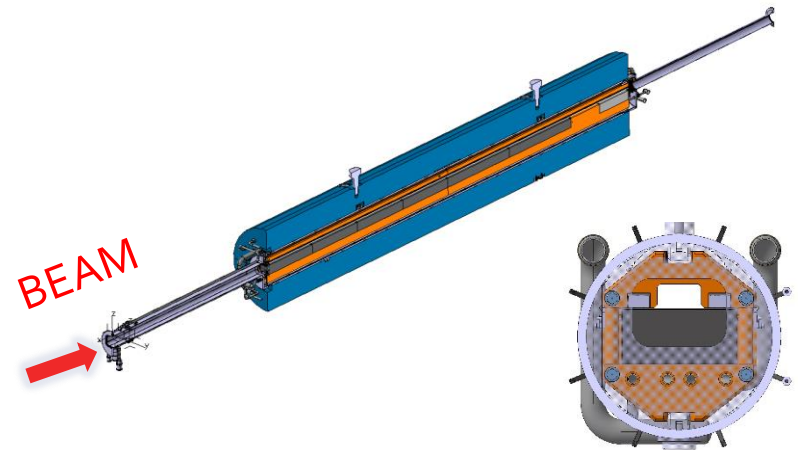
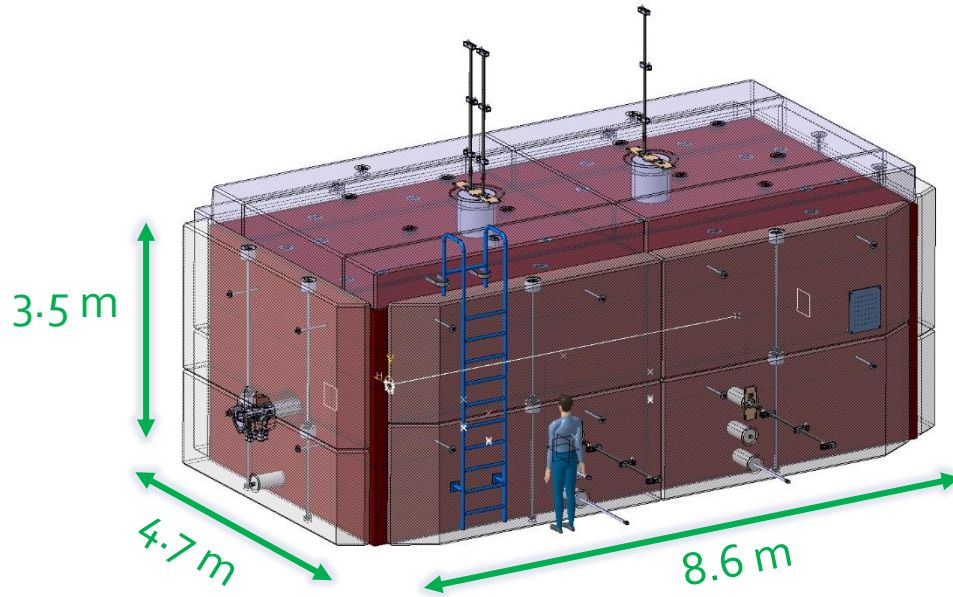
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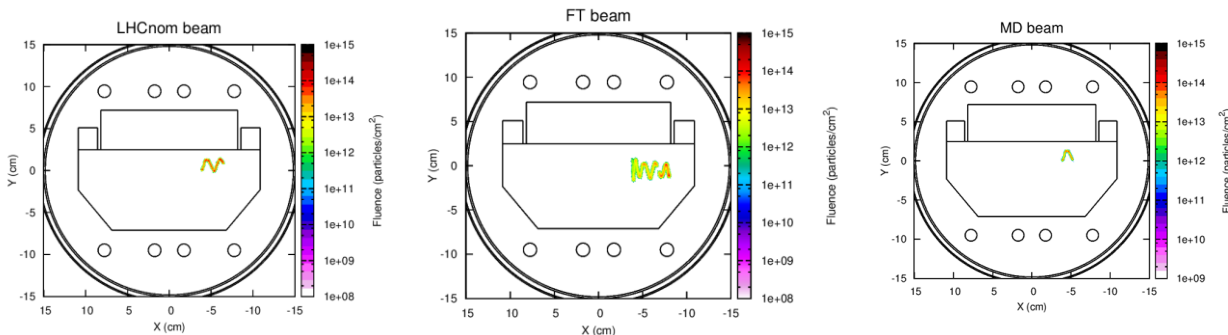
SPS beam dump after LS2

- After LS2 → Only one internal dump located in the SPS (LSS5)



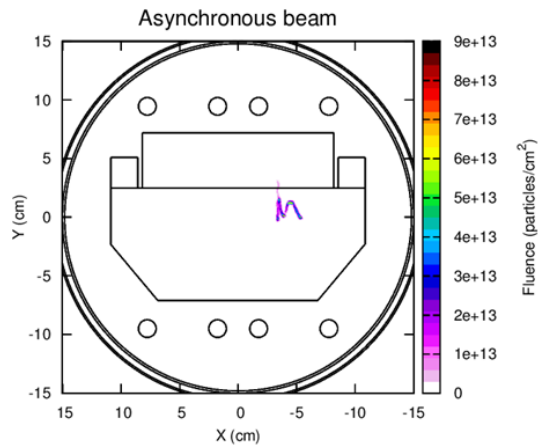
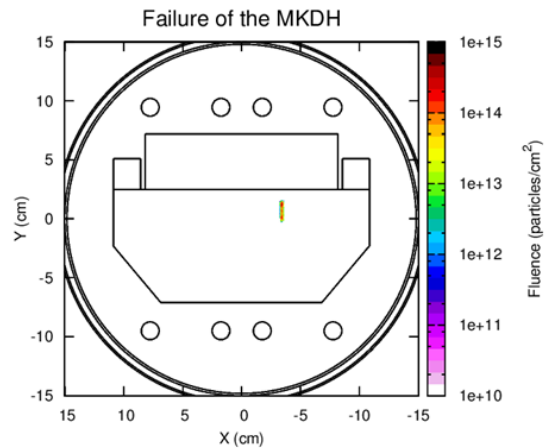
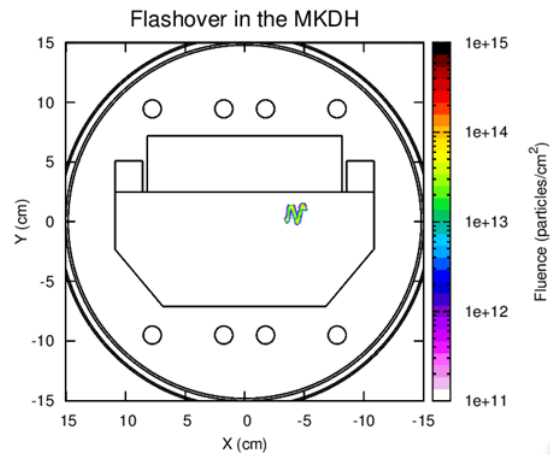
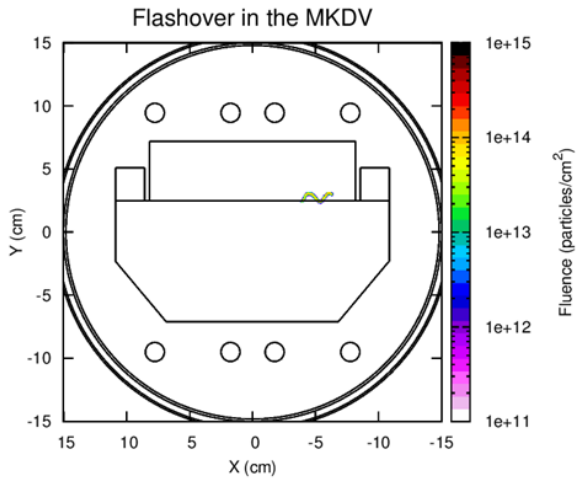
Motivation

- Localize the exact position of the beam spot:
 - The exact position of the beam spot influences on the stress and temperature distribution.
- Better understanding of the dump behavior.
 - Is the dump performing properly?
- Sweep patterns are really different depending on the beam case:



The position of the maximum temperature on the different blocks will change

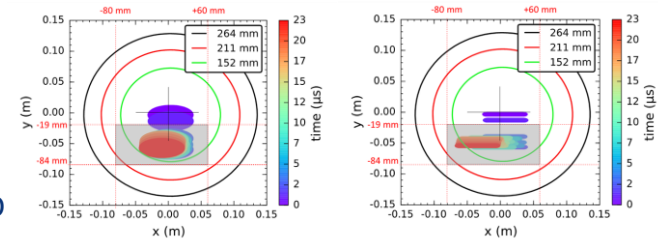
Motivation-failure cases sweep patterns



The kicker failures could be seen by the beam monitor

List of requirements

- Position: monitor to be located outside of external shielding (> 3 m from upstream end of dump)
- Instrument must be able to capture:
 - An image of the dumped beam before impacting the dump
 - A footprint image of the beam impacting the upstream face of absorbing blocks of the dump
- Minimum resolution should be ~ 0.5 mm
- Designed to withstand radiation
- Instrumentation to work under UHV
- Instrument maintenance/replacement should be possible (special ports on vacuum chamber to be added based on design)
- Functional Specification: EDMS 1509780





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Thank you for your attention.
Do you have any questions?