Status of the
HERA Electron Beam Dump System

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The HERA Electron Beam Dump System

Kickermagnets and Absorber

- **Beam Absorber**
- **Kickermagnets, Vacuum Chambers, Supports**
- **Pulsers**

Trigger Unit

- **Trigger Logic**
- **Hardware**

Trigger Sources

- **Temperature Sensors**
- **Electron RF**
- **Experiments**
- **Collimators, Monitors,…**

The HERA Electron Beam Dump System

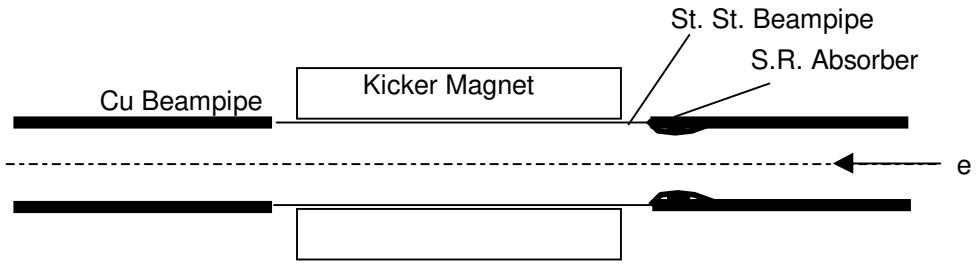
Slow or fast dump?

Fast: **Risetime 1 μs, 20 times faster than the injection kicker.**
Possible, but expensive and time consuming.

Slow: **Risetime 1 ms, kicker outside the vacuum chamber.**
Problem: Eddy currents in the chamber.
Solution: Thin steel chamber.

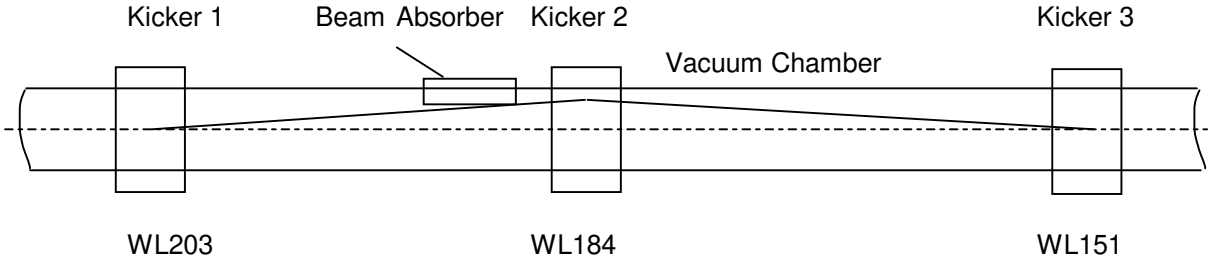
J. Rümmler

F. Obier

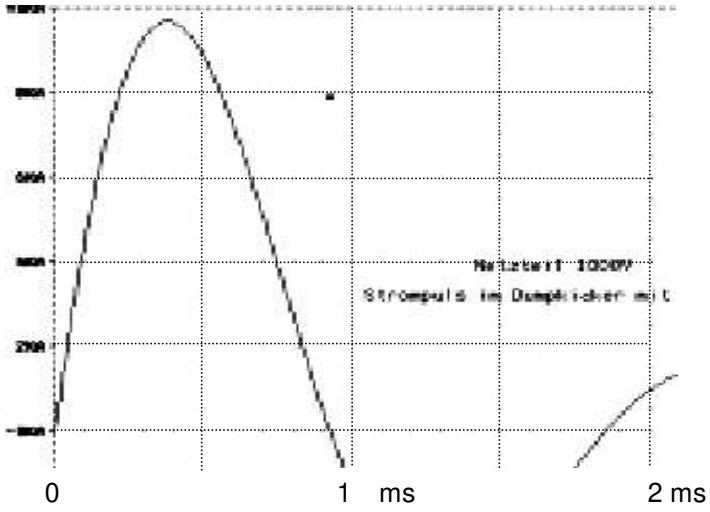


R. Sandhoff

3 Kickermagnets for a closed vertical orbit bump:



Fixed kick strength for all energies.
Bump amplitude: 40mm @ 27.5 GeV
Beam absorber diameter: 34mm
Bump rise time: 0.4ms (20 turns in HERA)



Status of the Components:

Beam Absorber: Ready for installation

Kickermagnets: Ready for installation

Vacuum Chambers: All parts available, final brazing next week

Supports: To be delivered this week

Pulsers: Copies of pulsers used elsewhere at DESY, available.
Modifications for improved safety are under way.

Trigger Unit

Trigger Logic:

One trigger unit per HERA hall,
collects trigger signals from all sources in this hall.

One main trigger unit in hall West,
collects trigger signals from all other trigger units,
sends trigger to the beam dump pulser.

All trigger lines are hardwired.
A trigger signal is given by switching off a constant voltage.

Hardware:

Two 19" crates per HERA hall with one PC and one logic unit each.
Components are available, software is under way.
System test in January.

Beam Dump Trigger Sources:

Temperature sensors at S.R. absorbers and electron collimators:
Sensors installed, electronics being build, system tests in January.

Electron RF: Beam dump at transmitter trip only if beam can not survive.
Software tests under way, algorithm needs tuning.

Experiments: Trigger signals can be delivered to L. Steffen, -FEB-.
One trigger per experiment plus detailed information via RPC call.

Quenchprotection: If a quench occurs in a GG or GO magnet,
the Q.P. generates a trigger.

Manual beam dump switch in the BKR: Being build.

Electron beam stopper: Before the stopper closes, the beam gets dumped.

Fast vacuum valve: Before the valve closes, the beam gets dumped.

S.R. monitors: Beam dump trigger prepared, but needs evaluation.

Feedbacks: No fault signal available. No dump trigger forseen.

Magnets: If a power supply of a main magnet trips, the beam gets dumped.

dI/dt: If the electron current drops suddenly, the rest of the beam gets
dumped (algorithm needs tuning).