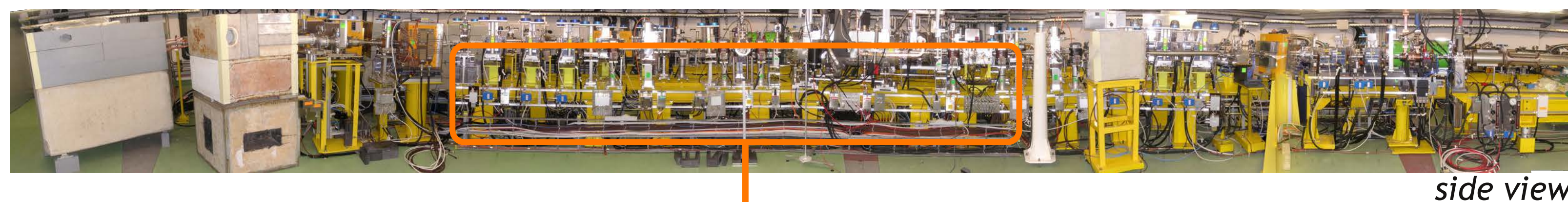


# RF-breakdown kicks at the CTF3 Two-beam Test Stand

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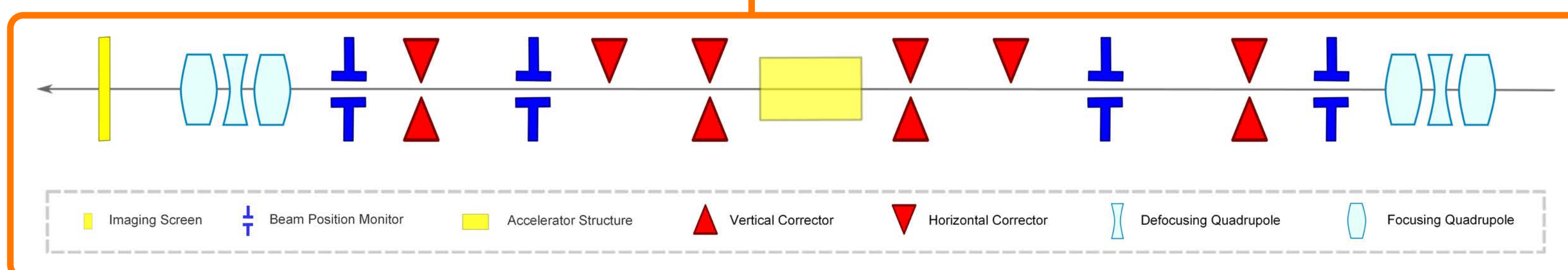
## Two-beam Test Stand at CTF3

The only existing experimental facility where the two-beam acceleration concept on which CLIC is based can be tested.



side view

Two parallel beam lines to test the power extraction from a high-current electron beam and its transfer to a low-current electron beam which gets accelerated in a 12 GHz CLIC prototype accelerator structure TD24 at a nominal gradient of 100 MV/m.



## Where

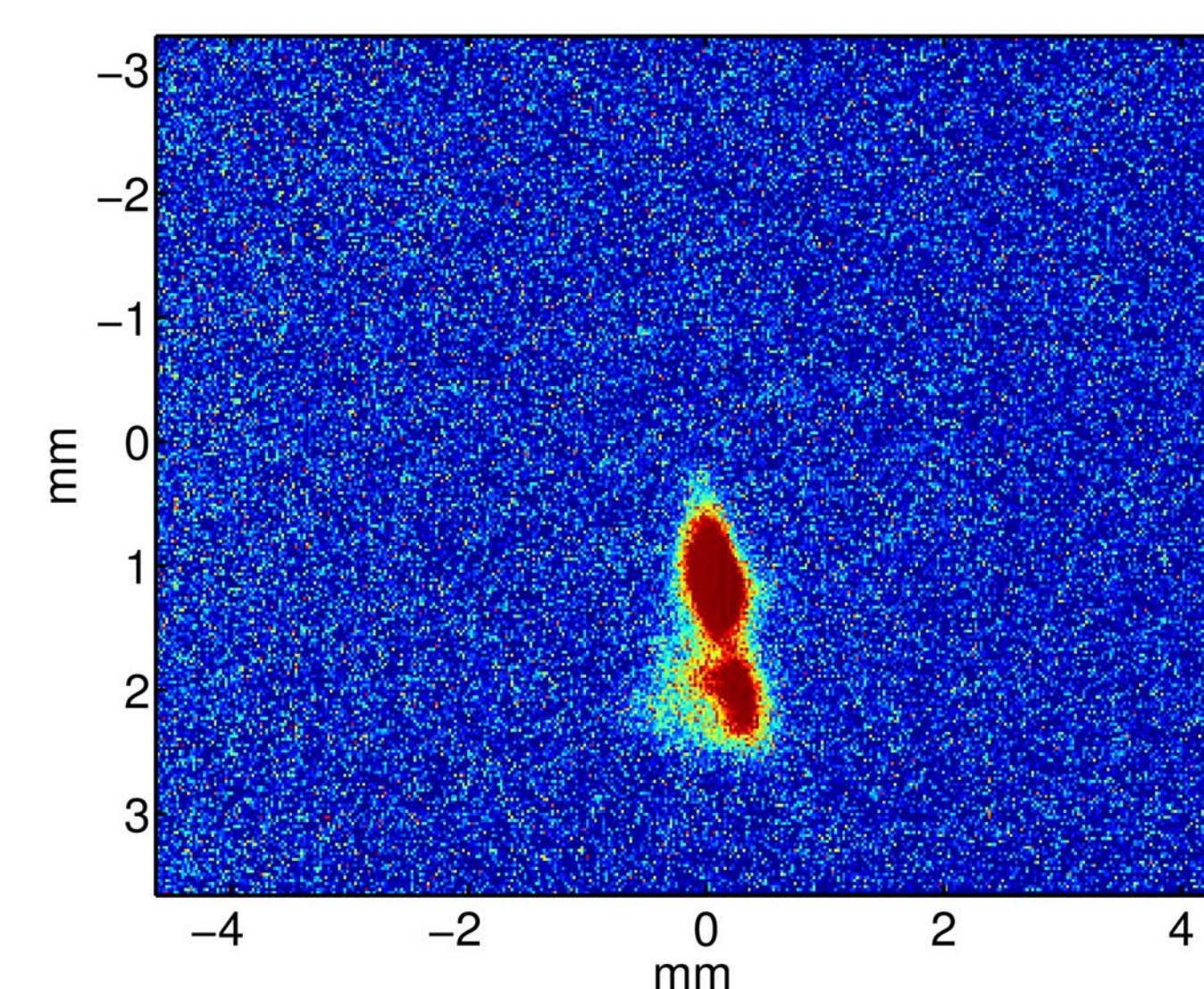
RF-breakdown in accelerator structures can randomly transfer transverse momentum to the beam (beam kick).

## What

Part of the pulse is kicked on the transverse plane, travels on a different orbit and hits the screen on a different point.

100 ns, 200 MeV electron beam spot on a YAG:Ce scintillating screen, about 5 m downstream of the accelerator structure.

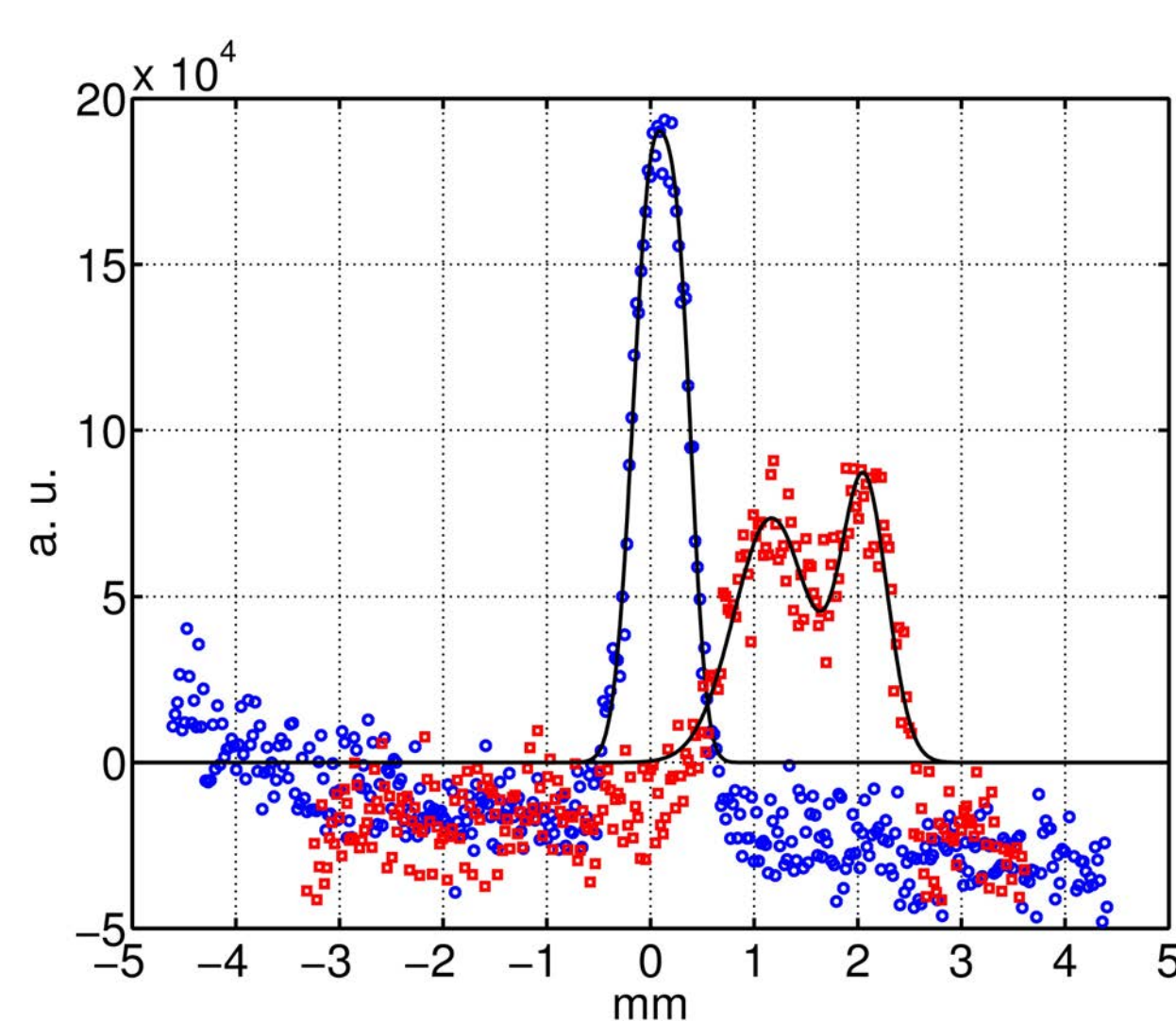
## Transverse kick to the beam



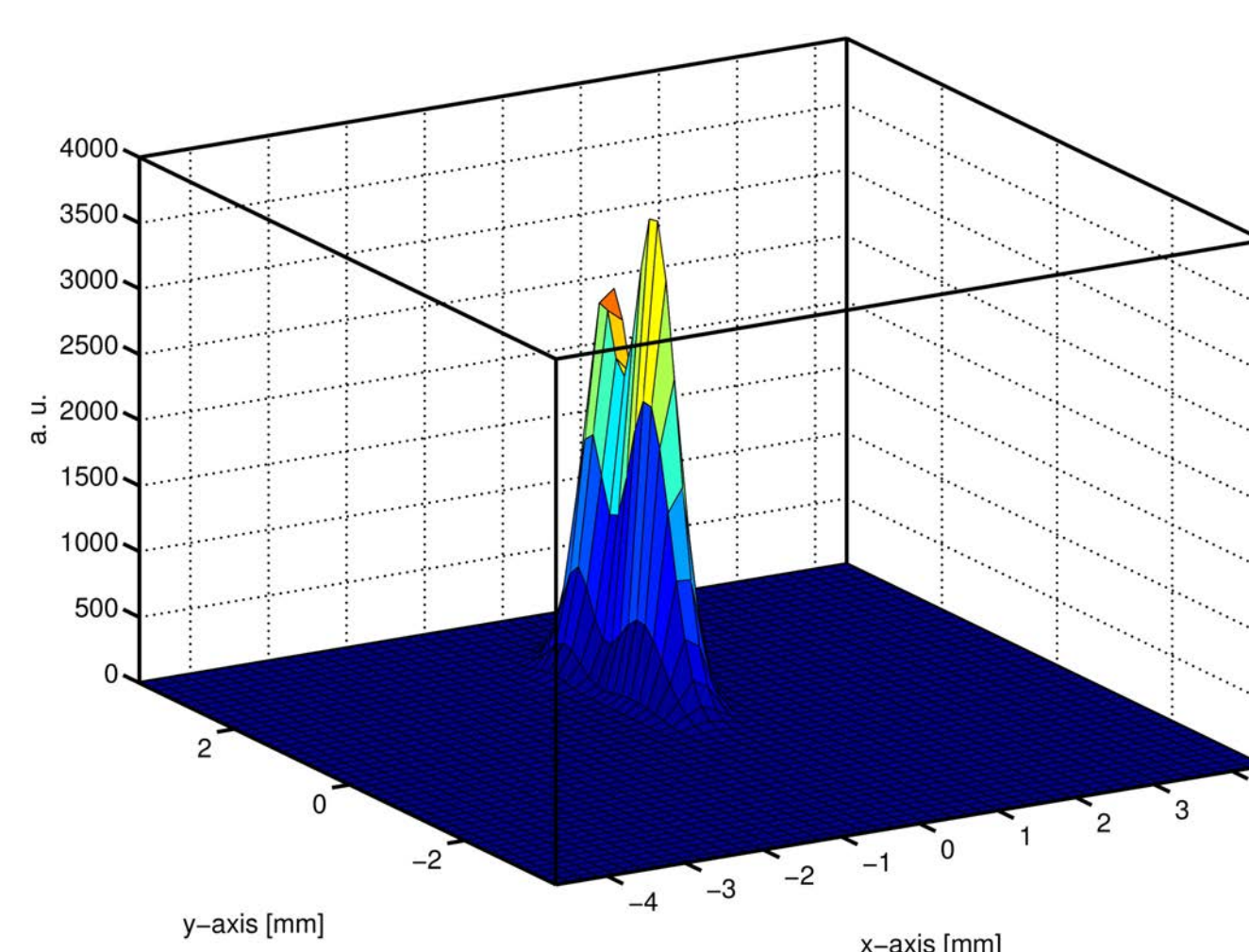
## How

## Methods

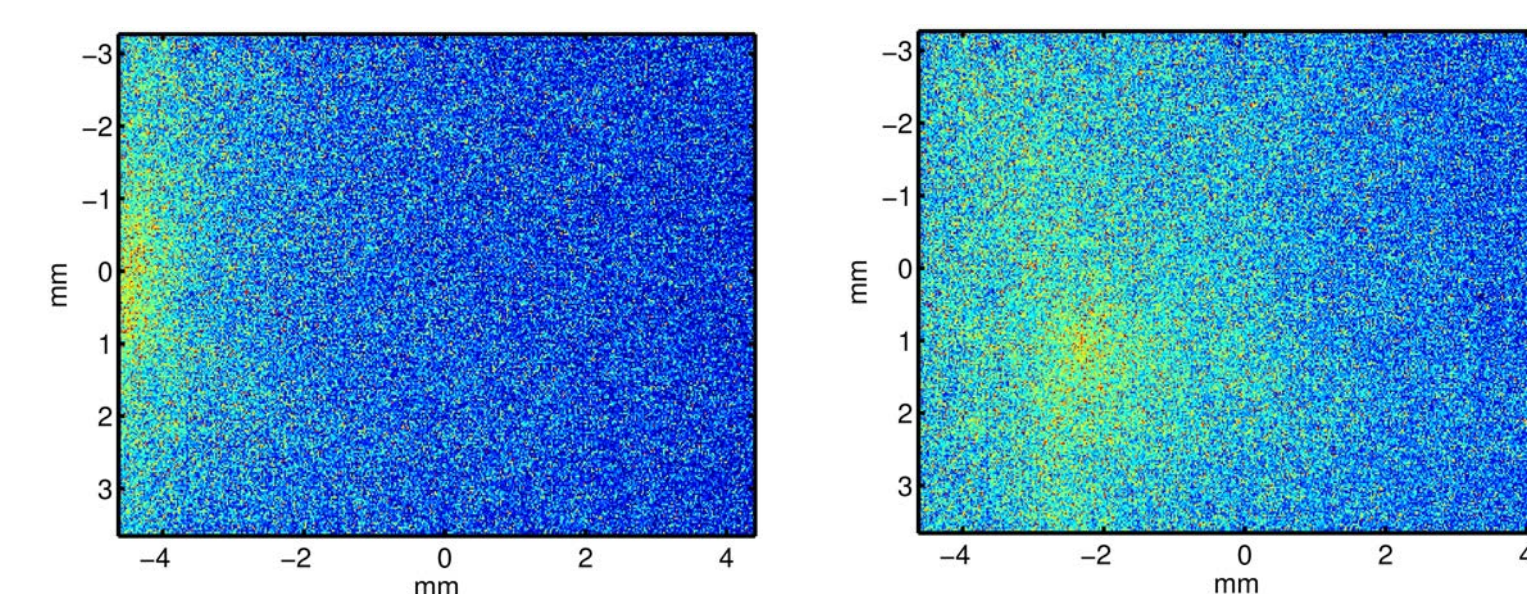
1D 2-Gaussian fit on the horizontal (blue) and vertical (red) profiles of the screen image.



2D 2-Gaussian fit of the screen image.

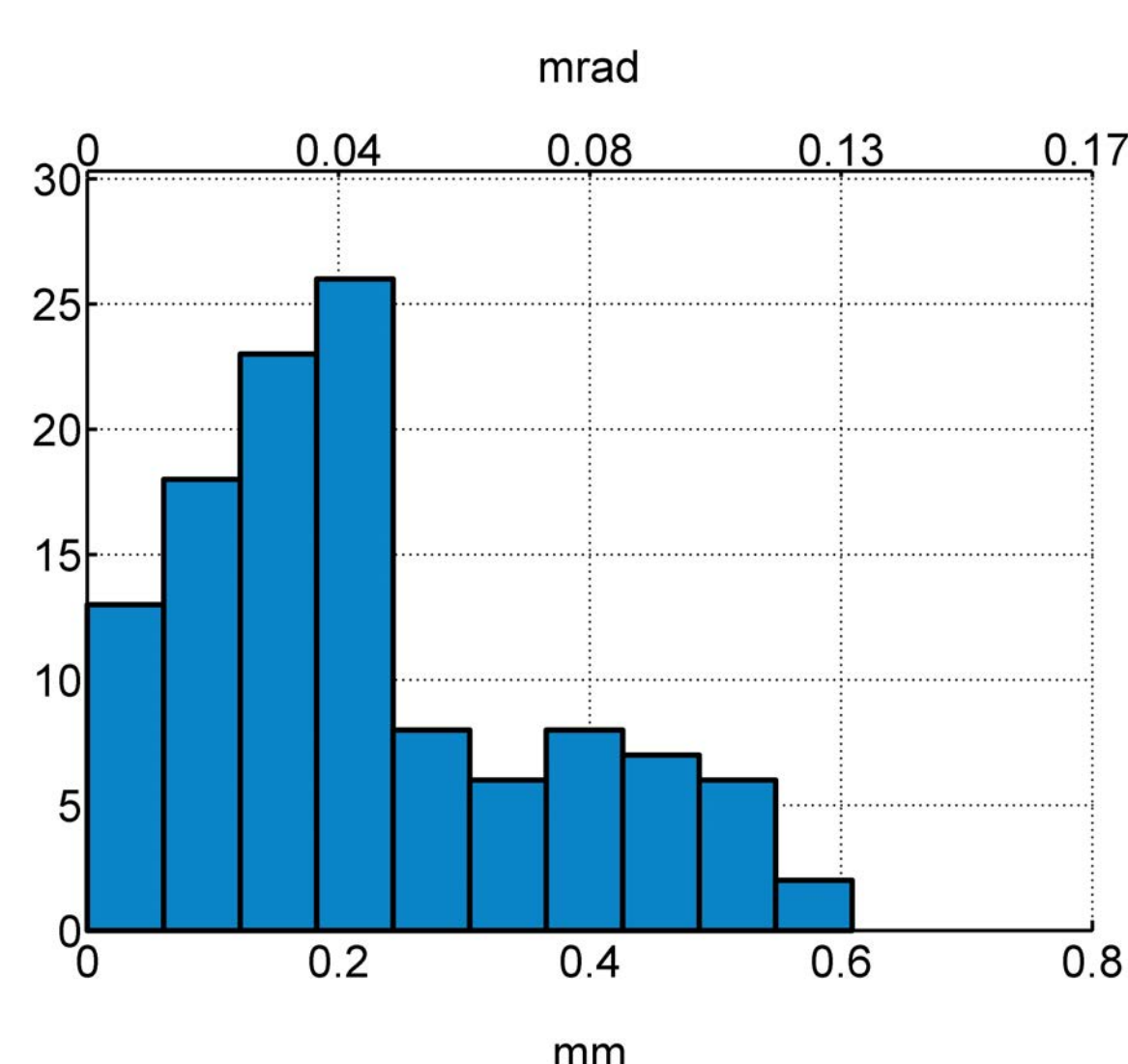


Breakdown current hitting the screen (image taken without beam)

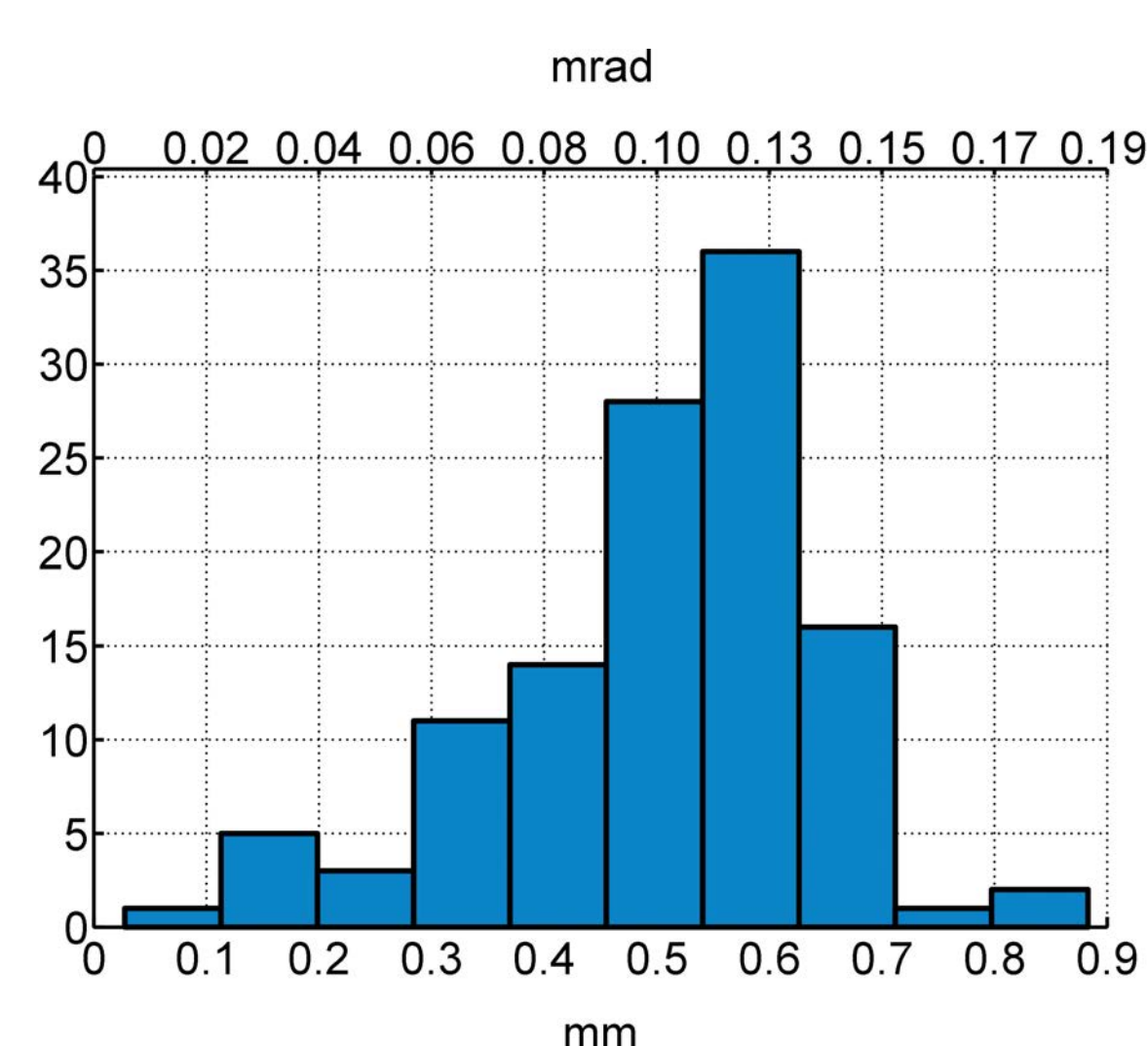


## Results

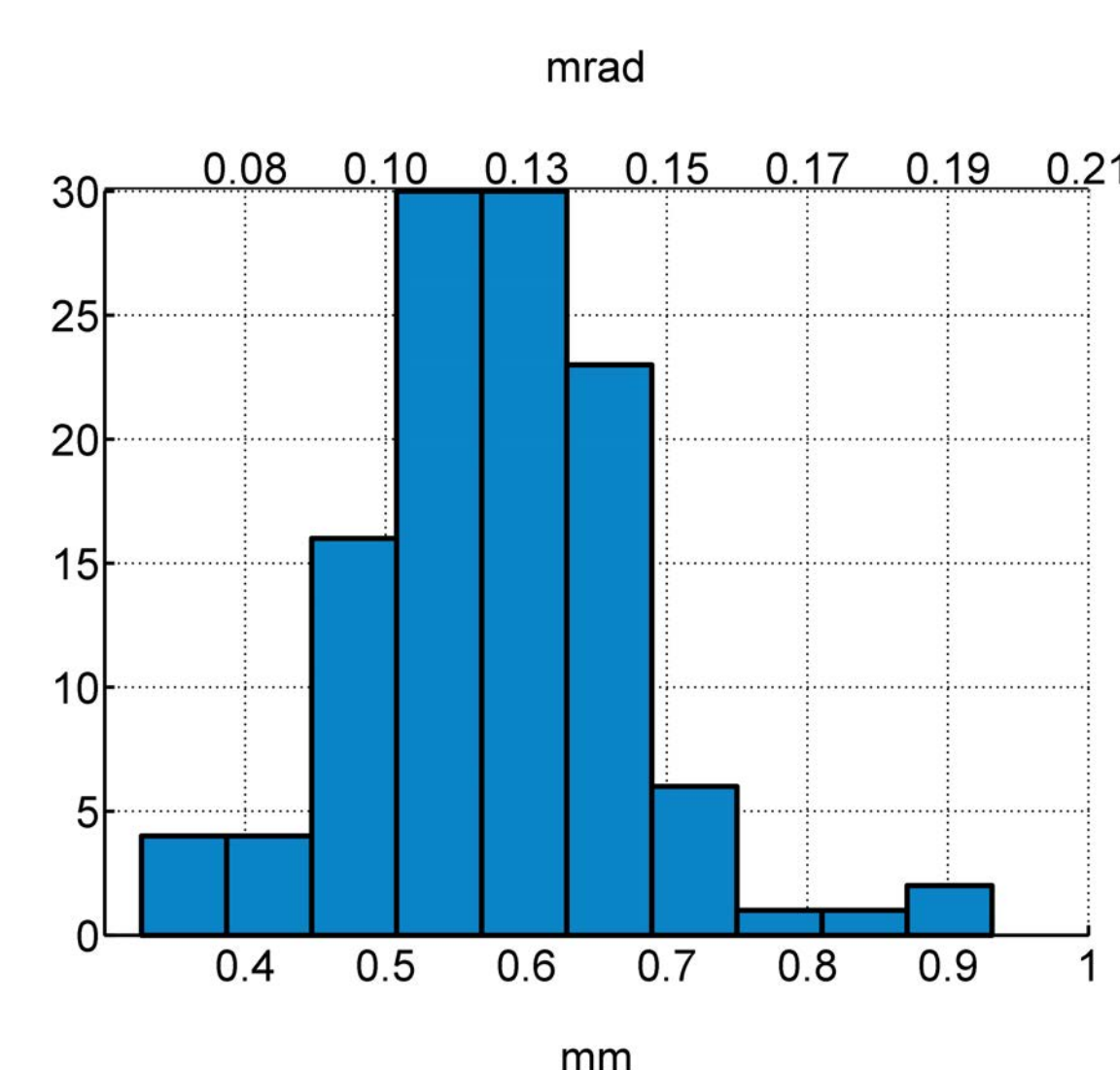
horizontal kick magnitude (typically 0.05 mrad)



vertical kick magnitude (typically 0.12 mrad)



kick magnitude (typically 0.13 mrad)



transverse electric field (typically 25 keV)

