First results on RF-breakdown measurements

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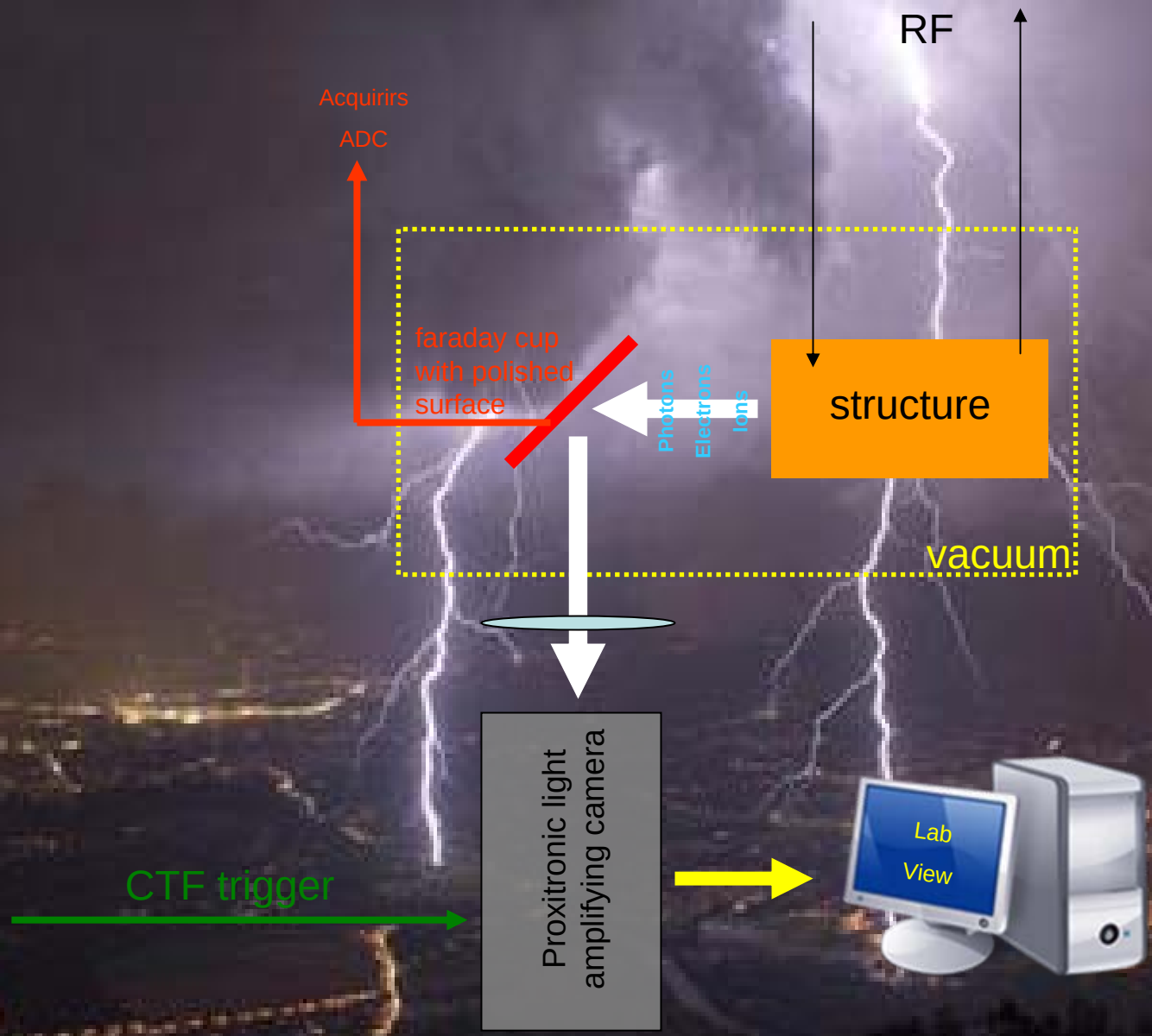
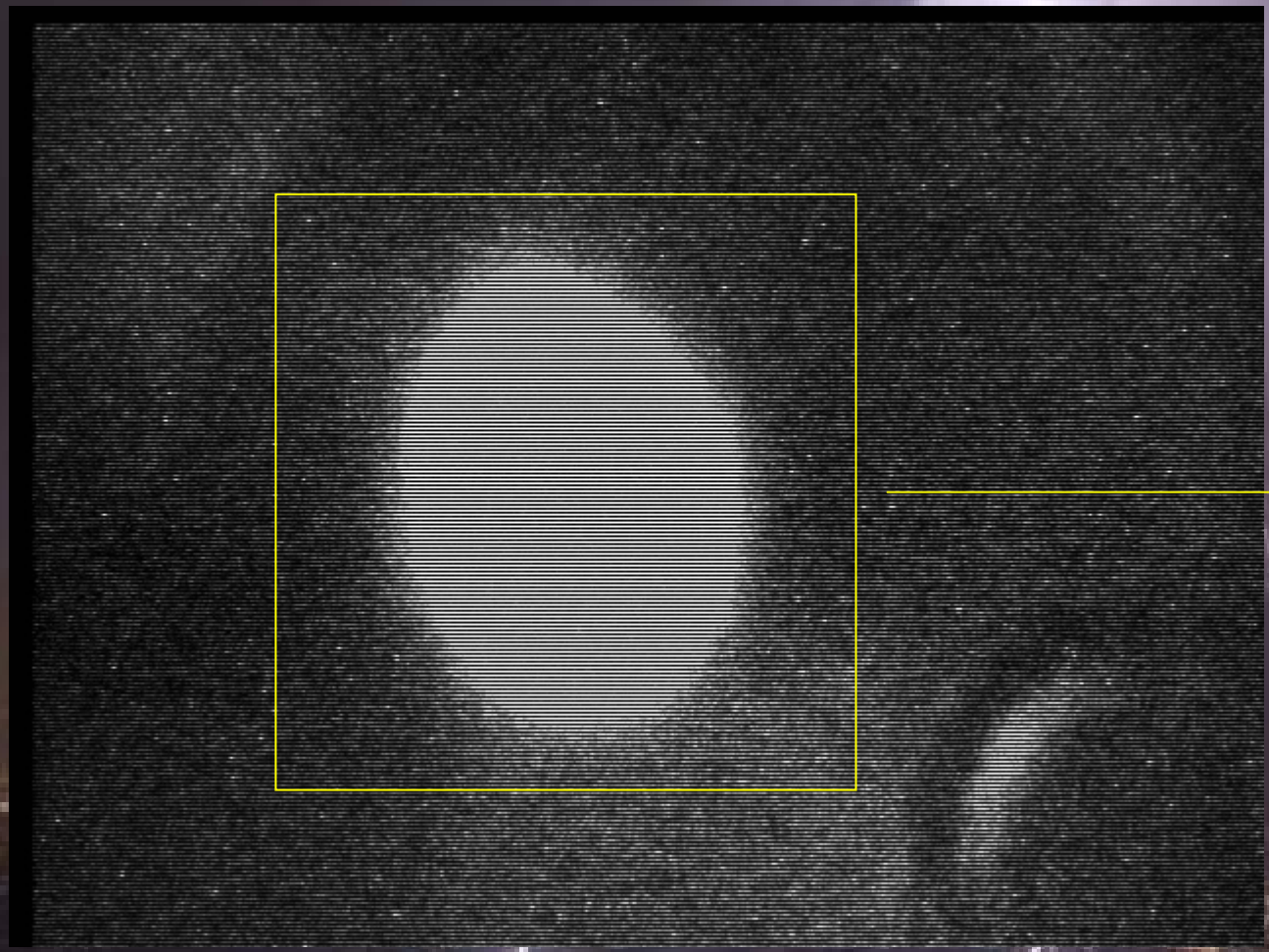
1st step: get a picture of the enemy…



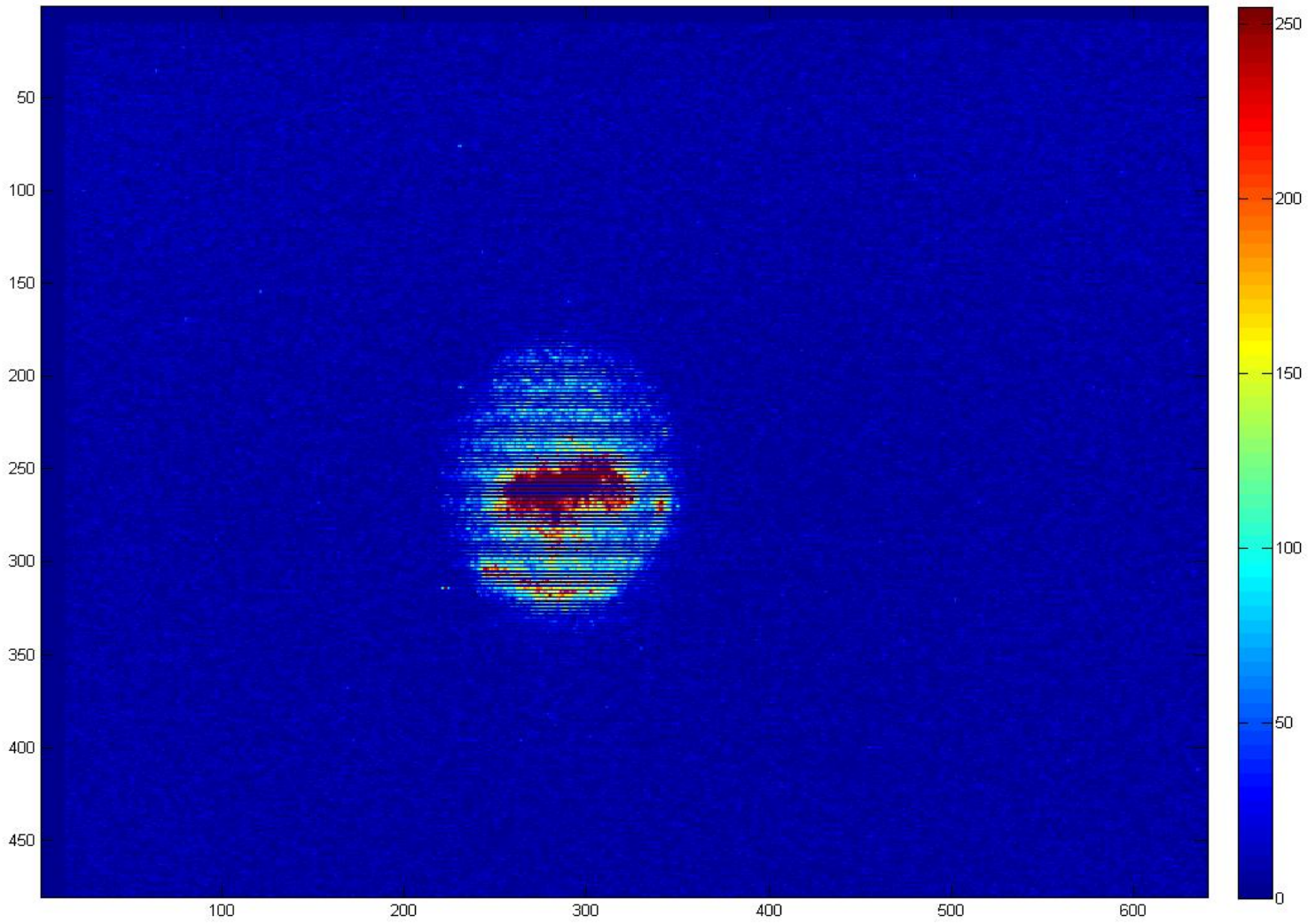
The image trigger



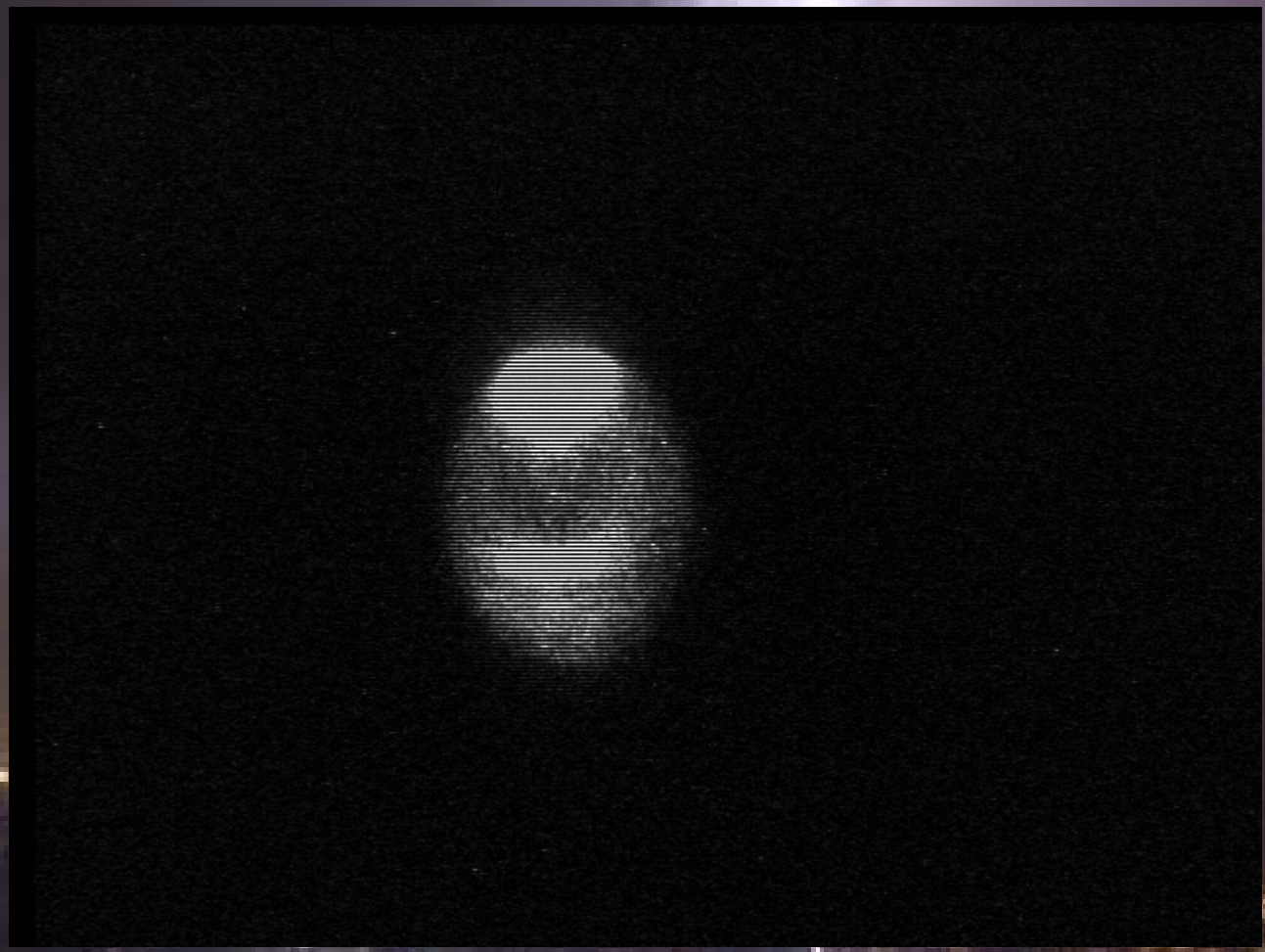
A LabView program calculates the average pixel intensity for each frame and triggers above a variable threshold…

A logfile includes intensity, name and Acquiris timestamp of each picture

Some typical breakdowns…



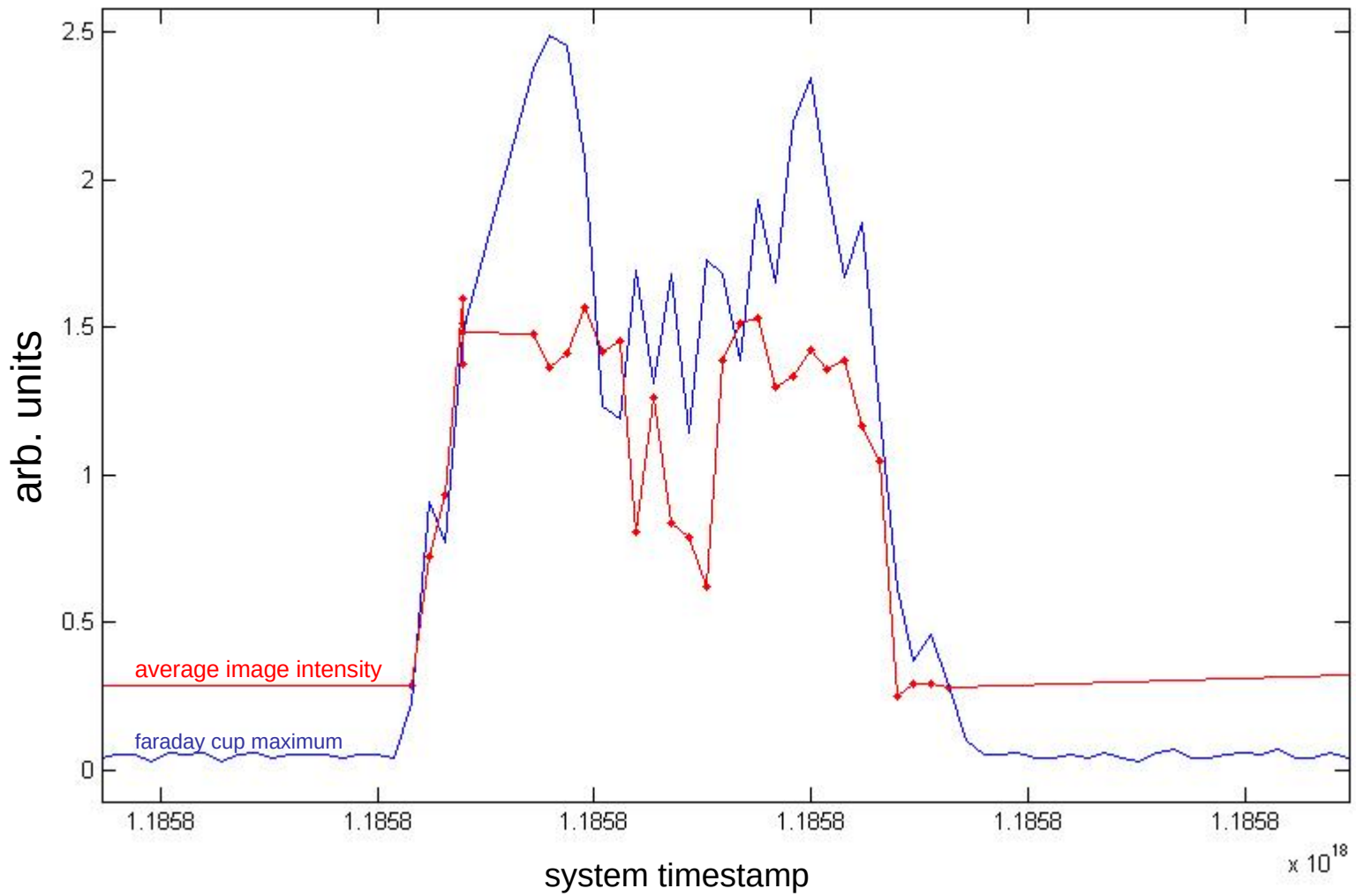
Some typical breakdowns…



...and some strange effects...

Maybe a correlation with ion-currents?

… data analysis going on …



… data analysis going on …

- combine conditioning software data with light and ion data
- find correlations between RF, light, vacuum, images
- check for preferred spots

How long does a breakdown emit light? First experiments with a short gate and the machine trigger show more than a few microseconds…

…it is difficult, every breakdown is different…

Outlook:

Things to look at:

- fast spectroscopy of light
- x-rays, maybe we can determine the position with them
- residual gas analyser, is it fast enough?
- spectroscopy of electrons ans ions

A GEANT4 simulation will be created in the next months to get a feeling which measurements can be done...