

# Minutes of WP-meeting 241

## Attendance:

DESY: Ralf Diener, Ulrich Einhaus, Oleksiy Fedorchuk, Leif Jönsson, Jochen Kaminski, Claus Kleinwort, Paul Malek, Felix Müller, Volker Prahl, Oliver Schäfer, Dimitra Tsionou  
Fuzebox: Paul Colas, Keisuke Fujii, Ron Settles, Jan Timmermans

## General News:

Jochen reminded, that the new Randalf-proposal has to be slightly modified. The TPC relevant paragraphs are uploaded to the agenda and comments are welcome. We still need to define a deliverable, which could be a module built from Japanese and European components and tested at DESY. Paul suggested also a second module for cooling tests.

Jochen also reminded everyone of the upcoming CM and that he would like to receive proposals for presentations.

## PCMAG/LP setup, test beam:

Ralf: no news on the setup.

## News from the groups:

Oleksiy presented his studies on the GEM discharges, which had destroyed a GEM in high gain configuration at the end of the last test beam. First the number of discharges and their positions were determined by filming a GEM which was put to 650 V (250 V – 300V is standard operation). It was observed, that sometimes two or three sectors discharge within less than 33 ms. Observing the voltages of the GEMs with an oscilloscope, an oscillation signal was observed. This oscillation could be reproduced in a CST simulation including the electrical and geometrical properties of the setup. A video showing the propagation of the oscillation is available at the indico page. First tests of damping these oscillations were done with a resistor and a capacitor in series connected to the HV-PS in parallel to the standard HV supply connection.

Measurements show, that the oscillations are damped significantly and no multiple discharges were observed anymore. However, still destructive discharges were observed. While studying the properties in more detail, Oleksiy observed, that the oscillation frequency is different on the common electrode and on the patterned electrode suggesting that the voltage difference between the two electrodes can be significantly increased shortly after a trip. A second filter, where a large capacitor is placed in parallel to the protective resistor is tested. With this configuration extensive tests with 30,000 - 150,000 trips were done. Still no conclusion can be drawn, whether a discharge is potentially destructive or benign. After some time areas with high discharge probability develop. These show (Verfärbungen) on the electrodes.

To decrease the discharge rate, Oleksiy is experimenting with heating up the GEMs in an oven before using them in a detector. At temperature above 200° C the copper is oxidized and should thus have a resistive coverage. Studies are continuing.

## AOB:

The next workpackage meeting will take place on April 28<sup>th</sup>.