Test with ABS69 and detector at WP

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EP-DT Detector Technologies

Test with source at 69, RPC at WP 💮

Detector Technologies EP-DT RPC, ECO2, Source On 100 120 **ABS 69** $\sim 100 \text{ Hz/cm}^2$ (for ABS 69, WP) - 100 80 $>140 \, Hz/cm^{2}$ Ohmic Currents @WP [µA] (for ABS 4.6, 50% max - 80 eff) Legend 60 Source Off, Ohmic Source Off, Physics Currents 0 V - 60 6000 V 8500 V 40 9000 V Physics 10500 V - 40 20 20 0 2023.01 2025.04 1025.01 23:10 024.04 24.10 Date

- All the time with ABS 2.2 and detector at 50% of Max. Eff. -> increase in the currents after ~1.5 weeks of irradiation
- Last two weeks, ABS 69 and detector at WP -> No increase in the current

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Test with source at 69, RPC at WP

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Blue: Scan on the day before the start of the test (lower current since the detector was kept off the week before)

Orange: Scan after 1 week of test (+ 5 mC/cm²): increase due to the switch on of the detector, several switch off due to the iC_4H_{10} issue

Green: Scan after 2 weeks of test (+ 12 mC/cm²): slightly lower of Ohmic current, comparable Physics current



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- Now the detector back to 50% of Maximum efficiency;
- This test seems to suggest that the increase in current is due to the too high background irradiation rather than an issue with the gas mixture itself;
- -> if in the next two weeks the current is increasing again, we will see what to do:
- 1. Decrease further the HV, to find the right balance between ageing and detector stress
- 2. Try again with a different ABS factor, to see the limit of the acceleration that the detector could support

Is this effect seen by other collaboration RPCs?