



CM-P00071860

ISR PERFORMANCE REPORTRun 489 (physics) - 4th July 1974Ring 2 - 22 GeV/cSearch for Long Term Coupling EffectsExcited by the Model Solenoid on a Physics Stack (2nd run).

After the luminosity measurement the physics conditions in this run were very good, i.e. decay rates < 1 ppm/min, $h_{\text{eff}} = 4.5 - 4.6$ mm, $15.2 \times 15.4 \text{ A}^2$, on 8C22. Under these conditions any serious effects arising from the solenoid should be clearly visible. The run was divided into three periods : "stable beams" 16.00 h to 21.00 h, solenoid applied 21.00 h to 04.00 h, and "stable beams" 04.00 h to 08.00 h. The decay rates and $h_{\text{effective}}$ were recorded (see Figure 1) and Schottky scans were made at regular intervals. The solenoid was inclined to the ring 2 beam at 7.4° to simulate the action of the proposed detector solenoid. This required two other H-magnets to be used as closed orbit compensators. There are peaks on the decay rate graph (see Figure 1) corresponding to the disturbance of applying or removing this orbit correction.

The graph of $h_{\text{effective}}$ gives some indication of an increased slope after the solenoid application, but this could equally be attributed to a drift in the counters. The increase in decay rate is slightly faster than has been in some runs (mostly $12 \times 12 \text{ A}^2$) but this is probably due to the disturbance of applying the solenoid rather than the solenoid itself. No significant changes were seen in the Schottky scans except for a slight increase in the radial peak at $Q_h = 8.60$. However, the particles trapped in this resonance, $5Q_h = 43$, naturally increase as the beam's tail grows. It did not appear to be an abnormally large or fast growth.

It was not possible to clearly identify an effect arising from the solenoid.

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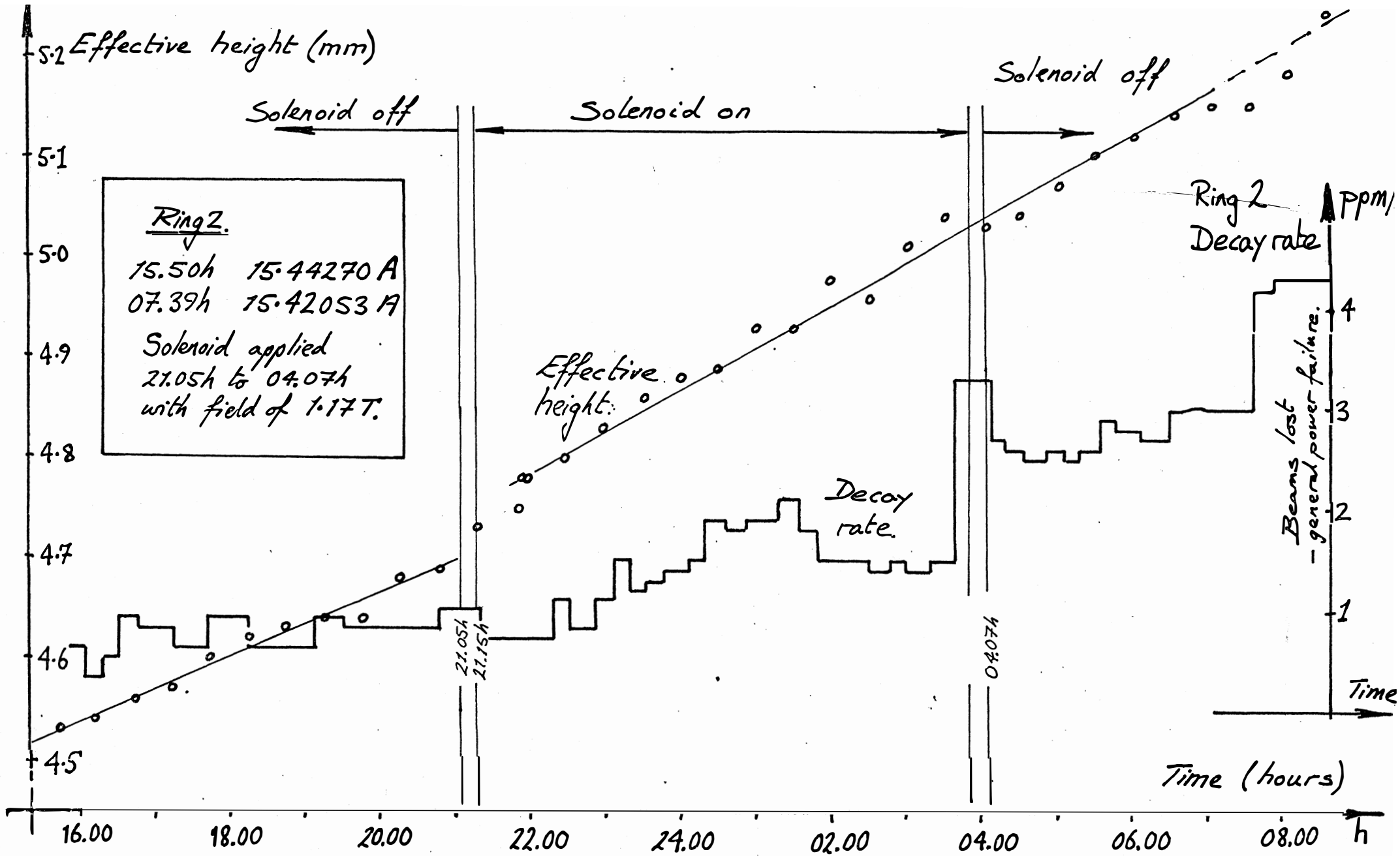


Figure 1. Evolution of effective and the ring 2 decay rate.