Polarization analysis

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1 Life-time analysis

Life-time analysis was done on the basis of the data from run 7079. The data were fitted from 30 to 250 seconds of run time. In Figure 1 are shown (left to right): the polarization and cross-section fits (constant) for each ring separately, and the cross-section from all rings as a function of time.

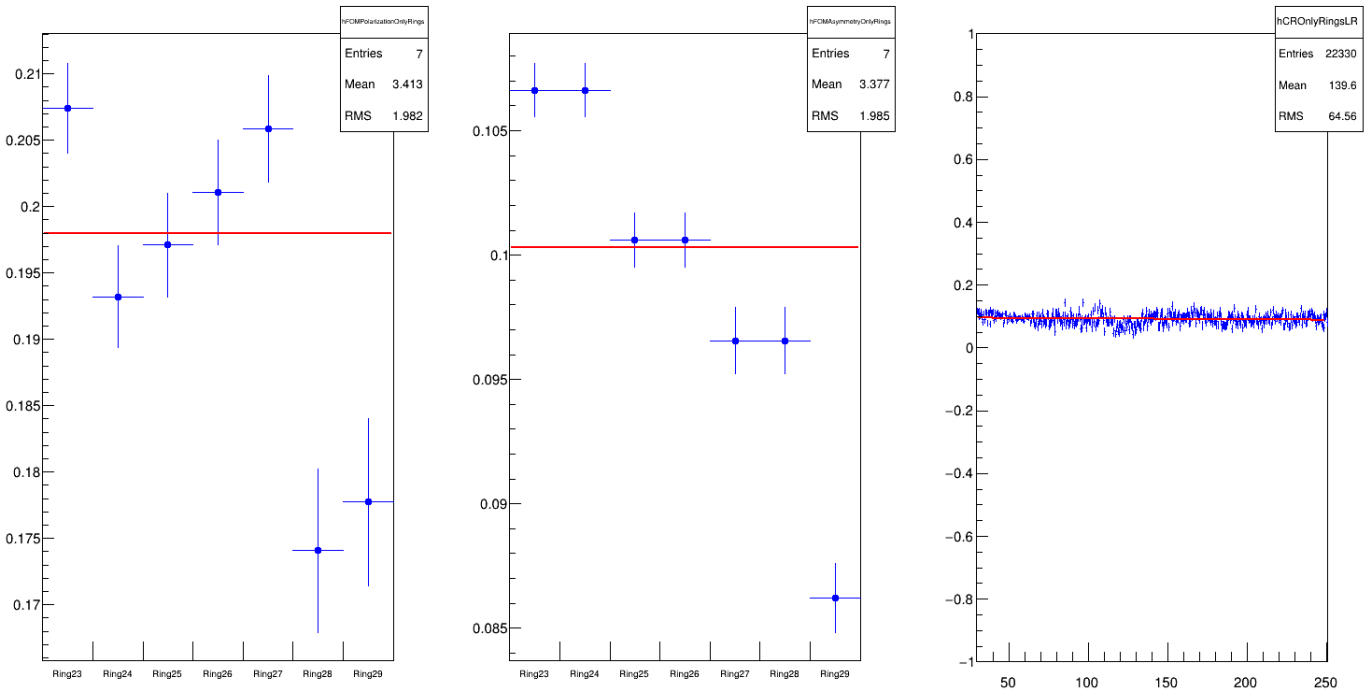

Figure 1: Polarization and cross section data.

We fitted the linear model to the cross-ratio data. Polarization life-time is then estimated as $\hat{\tau} = -1/\hat{\beta}$, where $\hat{\beta}$ is the slope estimate of the fit. This was done for each ring separately. The results are in Figure 2. Rings 10 and 15 (24 and 29 respectively) were excluded for due to high uncertainty in their estimates. The fit results are summarized in Table 1.

The three more precise estimates (rings 11, 12, and 14) lead to the conservative estimate of $\tau_{CR} \approx 11$ thousand seconds.

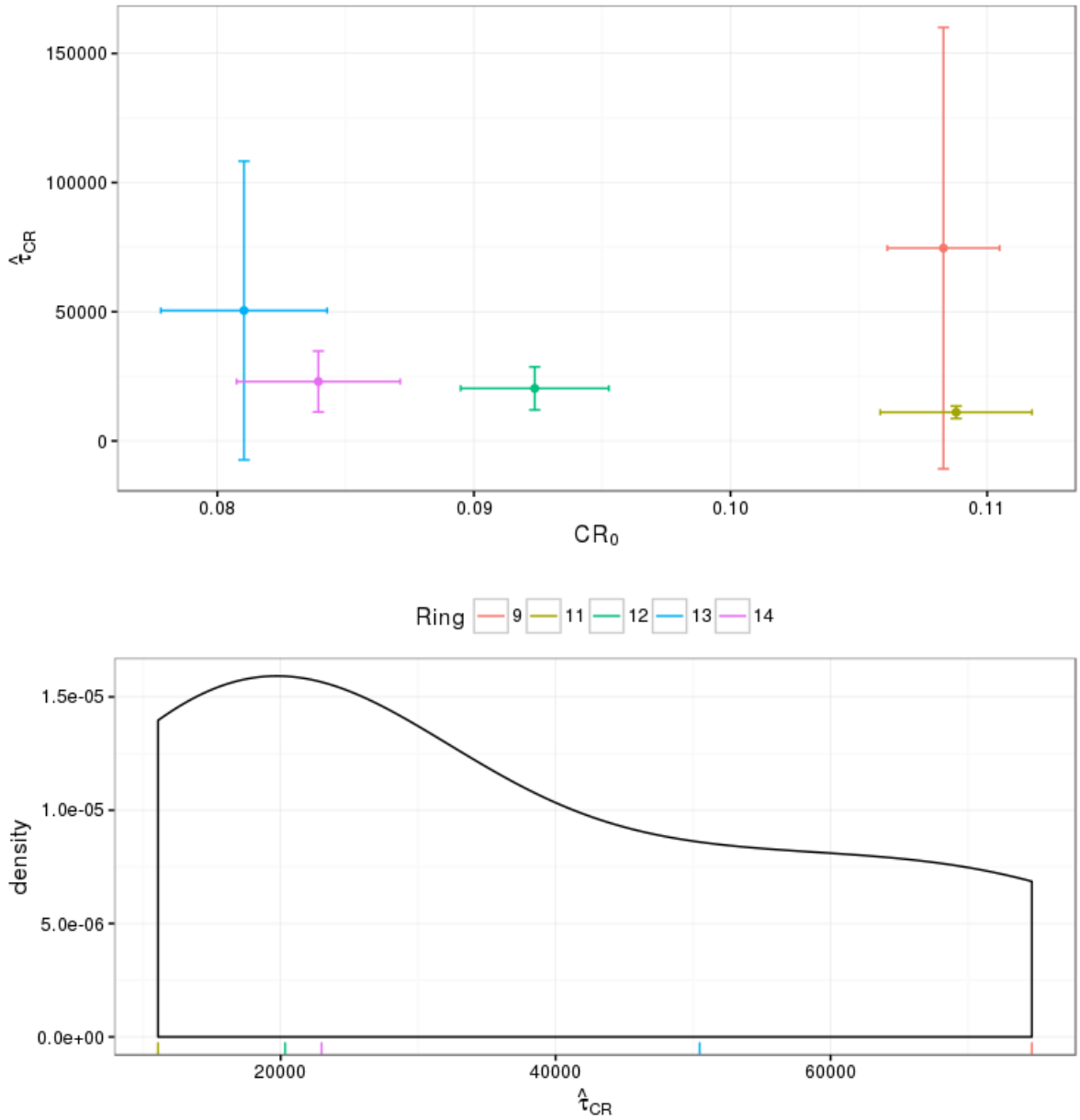

Figure 2: Cross-ratio life-time vs initial value (upper panel), and the density distribution of the life-times (lower panel).

Table 1: Fit results.

Ring	CR_0	$\sigma(CR_0)$	$\hat{\tau}_{CR}(sec)$	$\sigma(\hat{\tau}_{CR})(sec)$	$\hat{P}_0$	$\sigma(\hat{P}_0)$
9	0.1082970	0.00219011	74643.02	85463.586	0.256513	0.00257090
10	0.1023290	0.00222041	72182.36	80885.635	0.262250	0.00262840
11	0.1087920	0.00295643	11083.84	2393.469	0.252412	0.00271611
12	0.0923701	0.00288661	20322.97	8346.538	0.257666	0.00277264
13	0.0810401	0.00323987	50478.54	57822.875	0.253199	0.00347838
14	0.0839395	0.00318726	22975.30	11790.275	0.260313	0.00357611
15	0.0618035	0.00491475	-45611.91	71725.457	0.237312	0.00384081