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-ratio from all rings as a function of time.

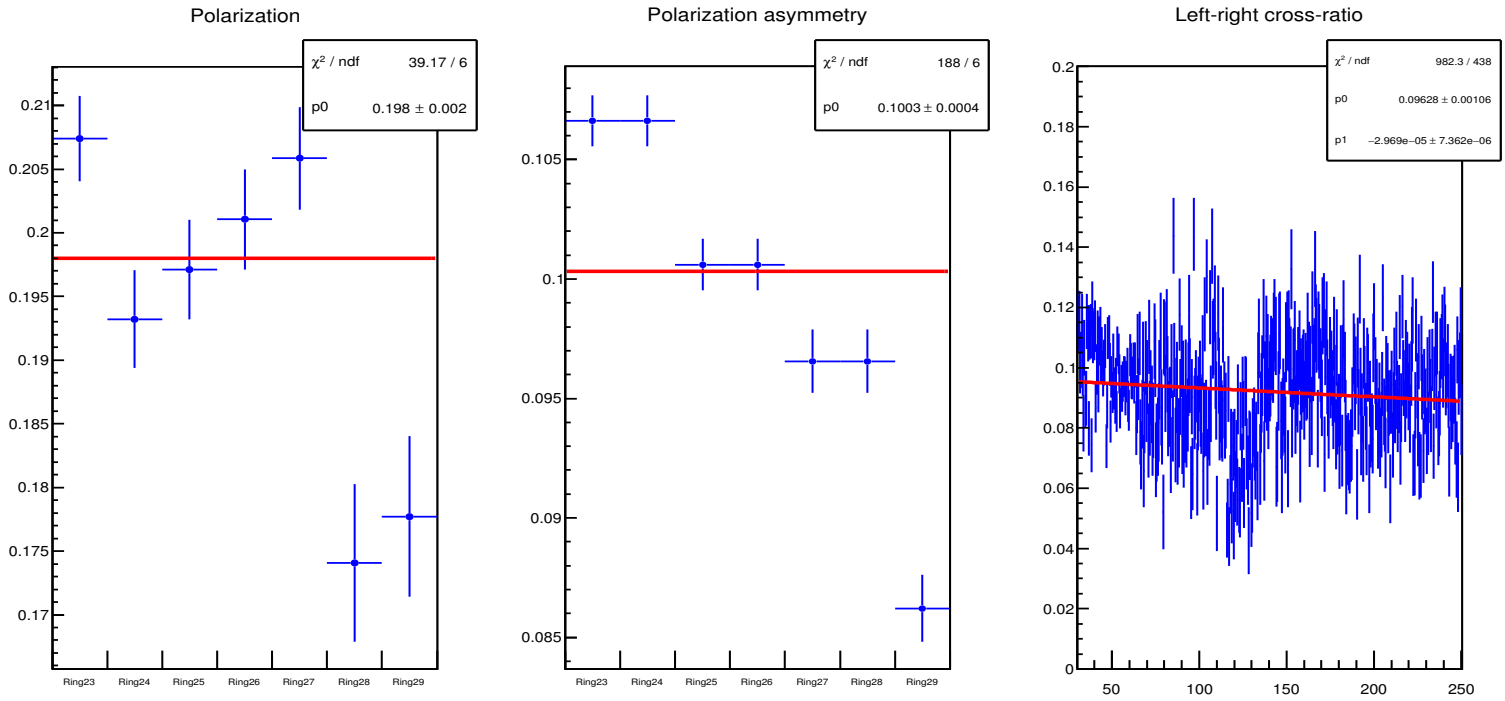

Figure 1: Polarization and cross ratio data.

We fitted the linear model to each ring's 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 24 and 29 were excluded for due to high uncertainty of the estimate. The fit results are summarized in Table 1.

Table 1: Fit results.

Ring	CR_0	$\sigma(CR_0)$	$\hat{\tau}_{CR}(sec)$	$\sigma(\hat{\tau}_{CR})(sec)$	$\hat{P}_0$	$\sigma(\hat{P}_0)$	χ^2_ν
23	0.1082970	0.00219011	74643.02	85463.586	0.256513	0.00257090	1.0091941
24	0.1023290	0.00222041	72182.36	80885.635	0.262250	0.00262840	0.9457489
25	0.1087920	0.00295643	11083.84	2393.469	0.252412	0.00271611	1.3768082
26	0.0923701	0.00288661	20322.97	8346.538	0.257666	0.00277264	1.0893151
27	0.0810401	0.00323987	50478.54	57822.875	0.253199	0.00347838	1.1641644
28	0.0839395	0.00318726	22975.30	11790.275	0.260313	0.00357611	1.1479155
29	0.0618035	0.00491475	-45611.91	71725.457	0.237312	0.00384081	1.1738242

The three more precise estimates (rings 25, 26, and 28) lead to the conservative estimate of $\tau_{CR} \approx 10^4$ seconds.

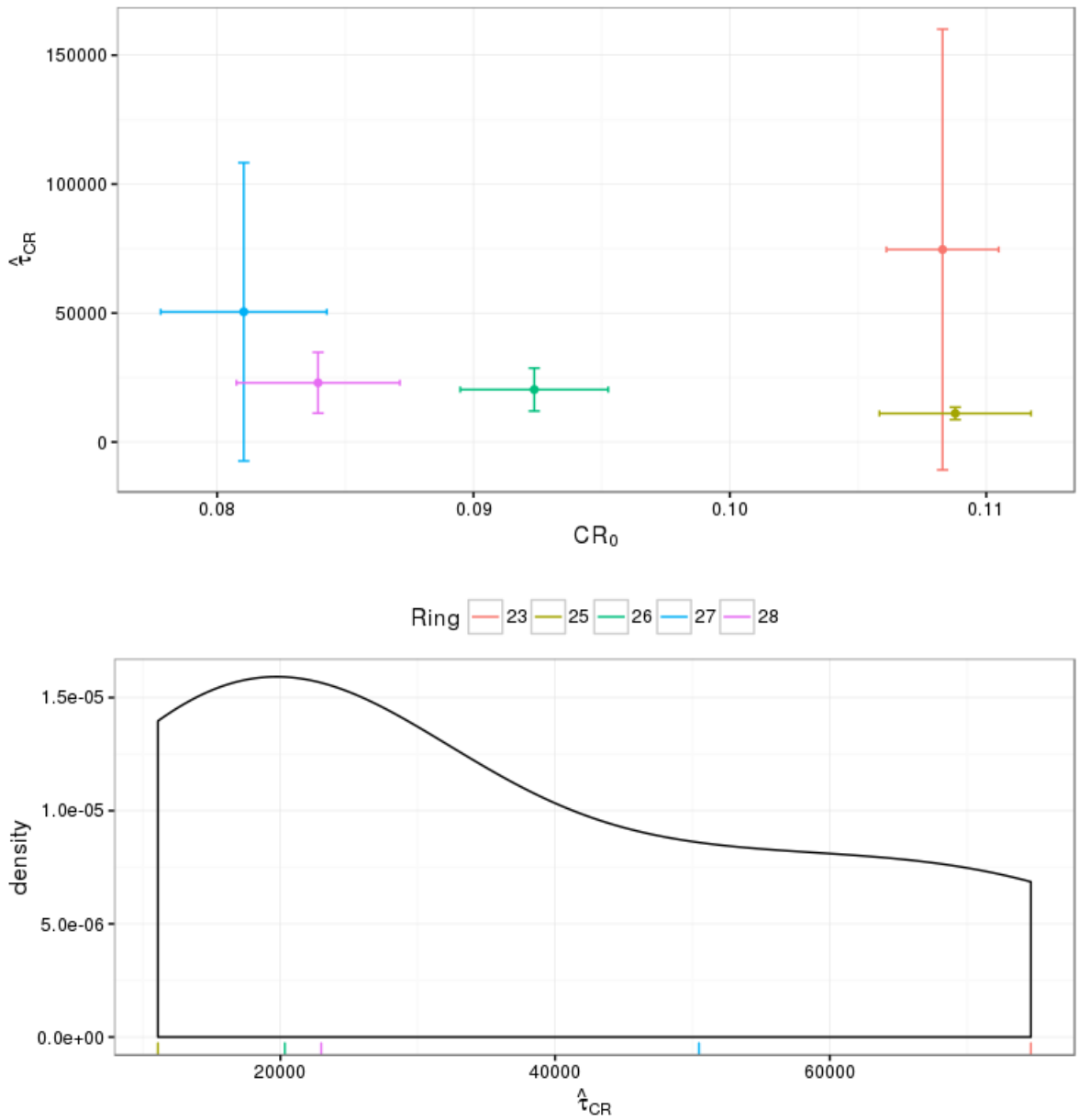

Figure 2: Cross-ratio life-time vs initial value (upper panel), and the density distribution of the life-times (lower panel).