Target Update

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I have completed the analysis for the target cell Dolly. Dolly was installe on March 8, 2007 and ran until March 22, 2007. Analysis for this cell was slowed by a lack of a laser-on AFP loss tests – used as part of the temperature test. However, this was overcome through careful analysis of similar data.

Due to this lack of test, the overall undertainty on the temperature and density was increased. The offsetting effect of the temperature dependence of κ_0 (an EPR constant), kept this uncertainty from dominating the polarimetry uncertainty.

The overall uncertainty was approximately 4.75%. This is primarily due to the uncertainty of κ_0 at our temperatures. A precise measurement of κ_0 at our temperatures is underway at William & Mary. If the uncertainty on κ_0 were zero, the polarimetry uncertainty would be $\approx 2\%$.

Included are plots of Dolly's polarization (Fig 1) and a plot of polarization for both Dolly and Edna (Fig 2).

Temperature information on the cell Barbara is sparse, and I am enlisting the help of both Gordon and Ameya to help collect it. Once this information is obtained, the complete target polarization for E02-013 can be presented.

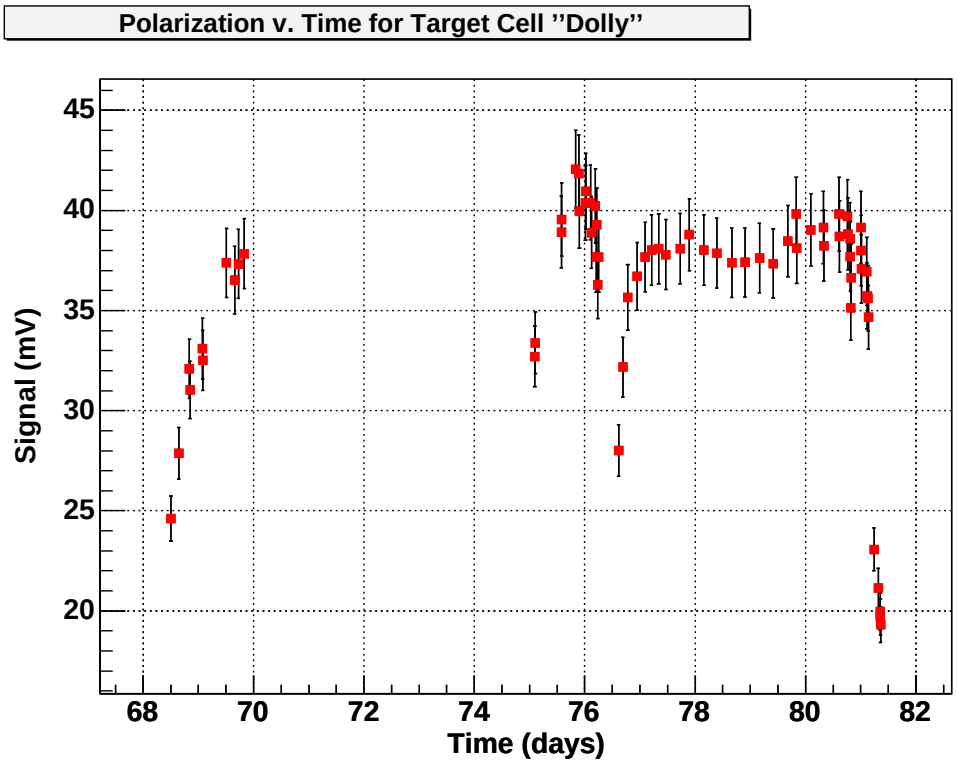

Figure 1: **Dolly Polarization.** The polarization of target cell "Dolly" as a function of time. Systematic errors are included.

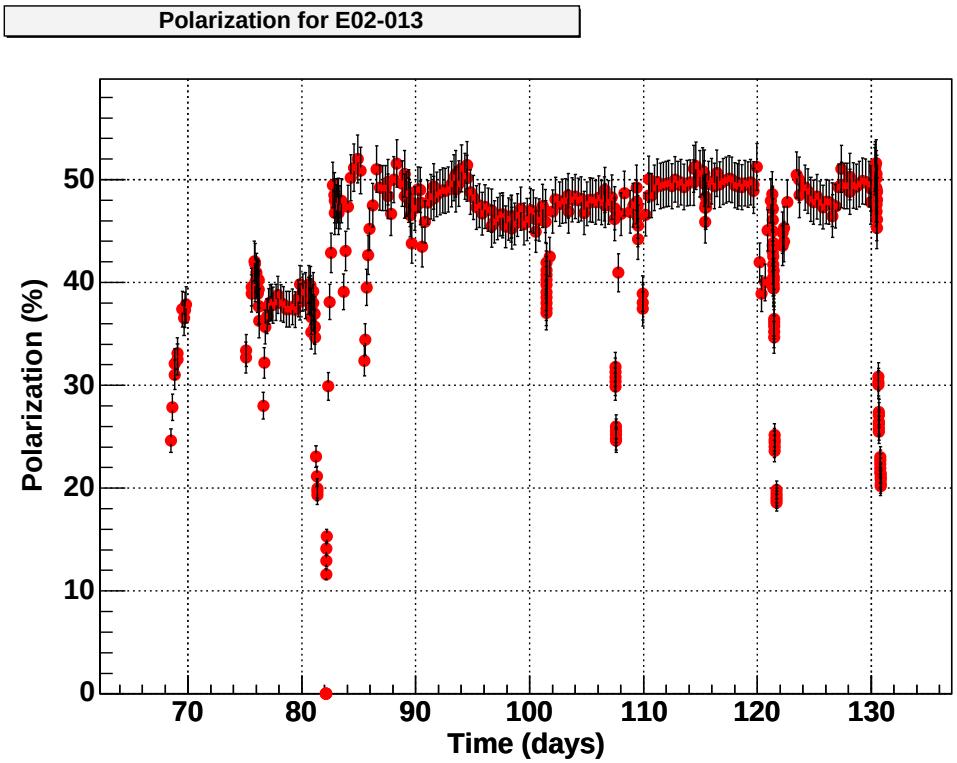

Figure 2: **Dolly Polarization.** The polarization of target cells Dolly and Edna, presented together. Systematic errors for each are included.

Time (days)	Polarization (%)	± (%)
68.5028	24.6134	1.13522
68.6444	27.8669	1.28493
68.8368	32.0841	1.47953
68.8479	31.0257	1.43123
69.075	33.0917	1.52631
69.0799	32.5057	1.49902
69.509	37.3875	1.72559
69.6583	36.5205	1.68498
69.7264	37.324	1.72156
69.834	37.8393	1.74641
75.0944	32.7116	1.5081
75.1062	33.3902	1.53961
75.5778	38.9232	1.79706
75.5819	39.5511	1.82534
75.8375	42.0611	1.94092
75.8924	41.842	1.93176
75.9028	39.9682	1.84405
76.0132	40.3773	1.86454
76.0181	40.9595	1.89078
76.1042	40.4013	1.86343
76.1222	38.8958	1.79446
76.1937	40.2327	1.85709
76.2056	37.6632	1.73861
76.2208	39.2983	1.81505
76.2354	36.279	1.67433
76.2528	37.6609	1.73866
76.6132	28.0147	1.29371
76.6896	32.1787	1.48477
76.7792	35.6564	1.64773
76.95	36.7136	1.69538
77.0944	37.6652	1.73821
77.2104	38.0222	1.75531
77.3403	38.0819	1.75784
77.4701	37.7921	1.74573
77.7278	38.083	1.75849
77.8972	38.7883	1.79079
78.159	38.0164	1.75522
78.3931	37.8628	1.74808
78.6632	37.3906	1.72603
78.9035	37.4086	1.72636
79.1653	37.6197	1.73651
79.4153	37.3504	1.72499
79.6806	38.4638	1.77581
79.8319	39.8305	1.83712
79.841	38.1186	1.75943
80.1	39.0274	1.80251
80.3243	39.1488	1.8076
80.3299	38.2416	1.76662
80.6097	39.8172	1.83881
80.616	38.6968	1.78621
80.7604	39.7069	1.83376
80.7681	38.8278	1.79386
80.8063	38.5972	1.78248
80.8125	37.6943	1.7404
80.8201	35.1446	1.62186
80.8285	36.641	1.69124
81.0042	39.1552	1.80623
81.0097	38.0048	1.75508
81.0139	37.0815	1.71252
81.1111	36.9511	1.70515
81.1153	35.7337	1.64953
81.1368	35.6015	1.64279
81.141	34.6677	1.60079
81.2417	23.0695	1.0652
81.3187	21.1408	0.975563
81.3549	19.9802	0.922231
81.3562	19.7027	0.908789
81.3611	19.3095	0.891672

Table 1: **Polarization Numbers.** The polarization numbers for the target cell Dolly, with uncertainty