

Polarimetry

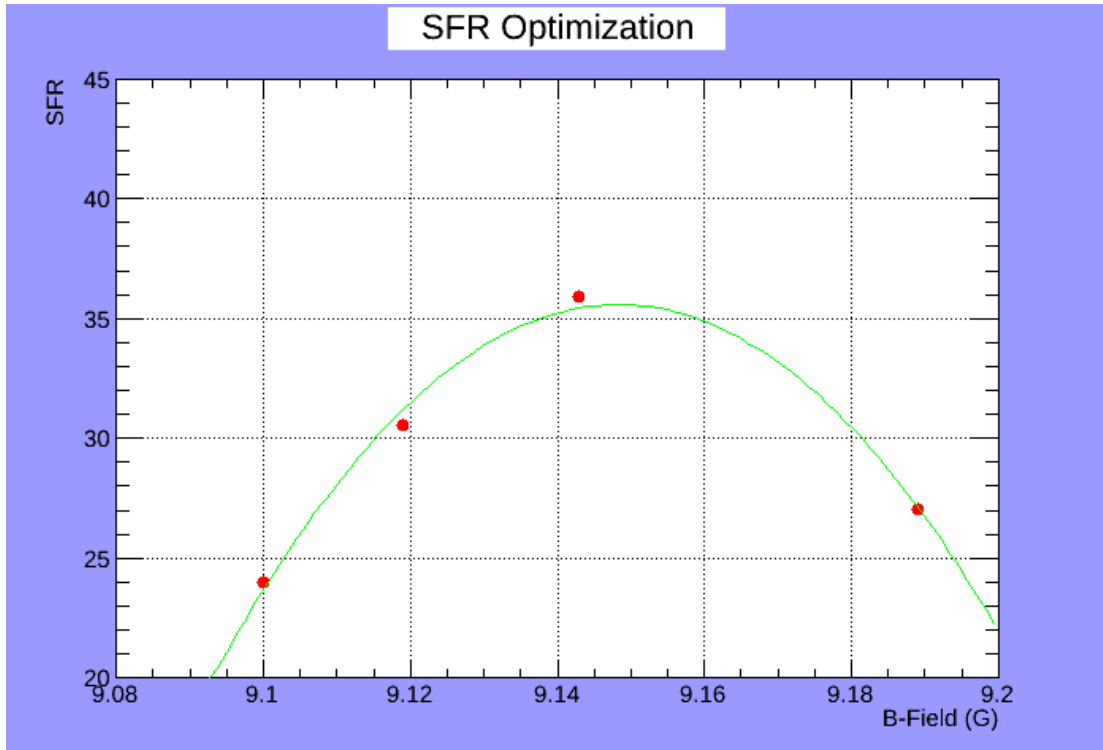
6-23-2015

n³He experiment

Data Runs

<i>Item</i>	<i>FGV</i>	<i>By1</i>	<i>By2</i>	<i>Run Numbers</i>	<i>Description</i>	<i>Spin</i>	<i>SFR</i>	<i>Notes</i>
1	486	9.143		37454-37456	Pedestal	up		Secondary Sutter Closed 4j collimator set
2	486	9.143		37457-37459	Polarized Cell	up		
3	486	9.189		37460-37462	Polarized Cell	up		Data in blue optimize SFR vs changes in guide field
4	486	9.100		37463-37465	Polarized Cell	up		
5	486	9.119		37466-37468	Polarized Cell	up		Bad runs 37463, 37464, 37466
6	486	9.143		37469-37499	Polarized Cell	up		Data in yellow are for polarization off -axis (3.5 cm up)
7	486	9.143		37500-37529	Polarized Cell	dn		AFP Flip
8	486	9.143		37530-37550	Polarized Cell	up		2nd AFP Flip
9	486	9.143		37551-37559	Polarized Cell	up		off axis beam left 3.5 cm
10	486	9.143		37580-37608	Polarized Cell	dn		AFP Flip
11	486	9.143		37609-37637	Polarized Cell	up		2nd AFP Flip
12	486	9.143		37638-37640	De-polarized Cell	n/a		

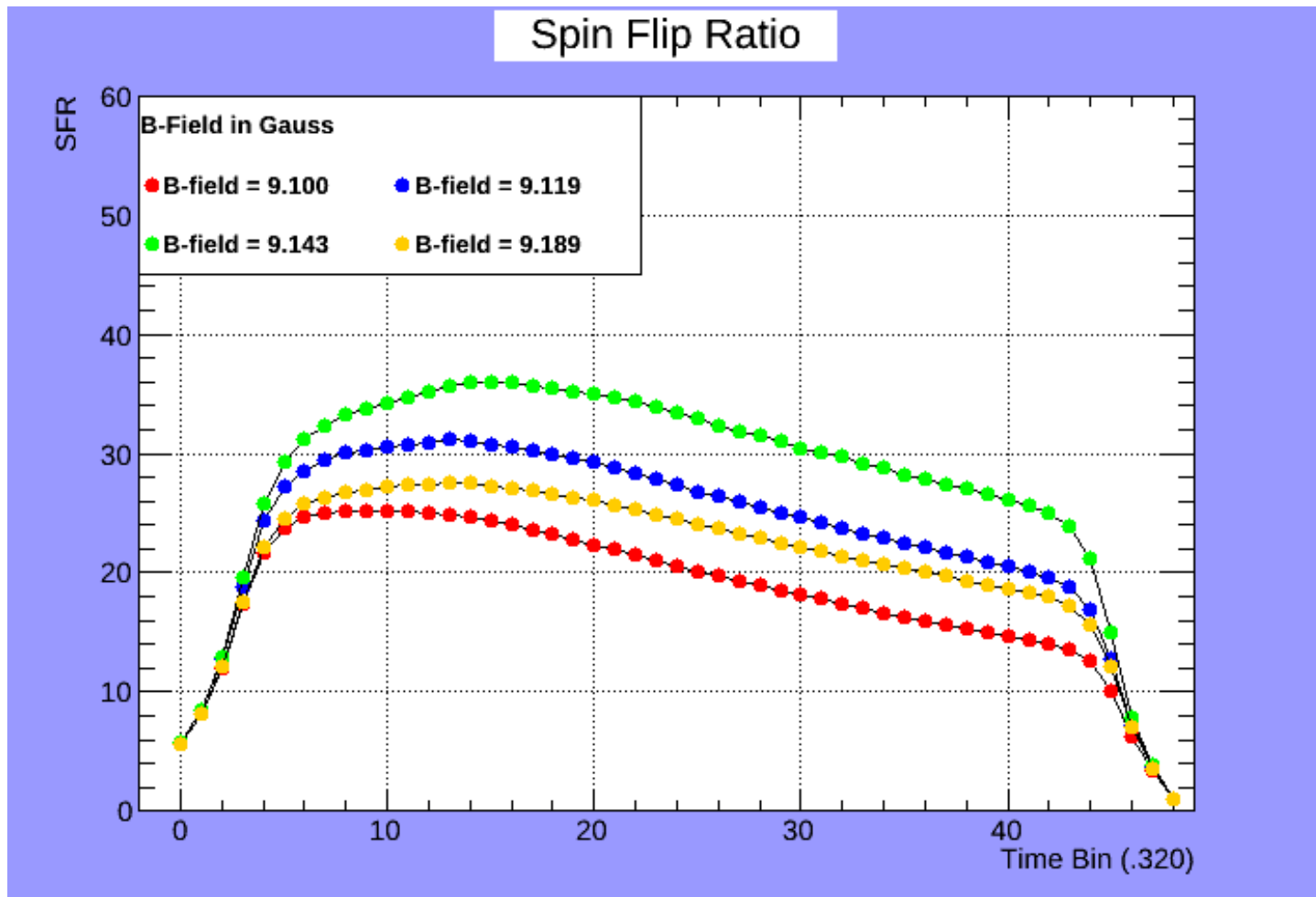
Optimization of SFR



Date	BY1	SFR
2-25-2015	9.100	34.039
3-25-2015	9.119	34.173
4-21-2015	9.118	40.432*
5-20-2015	9.141	33.688
6-23-2015	9.148	35.581

*Measured at low beam power.

Optimization of SFR



Optimization Data

37465	9.100	23.9719
37468	9.119	30.5323
37457	9.143	35.8855
37460	9.189	27.0634

Minimizer is Minuit / Migrad

Chi2 = 0.738063

NDf = 1

Edm = 1.09563e-08

NCalls = 214

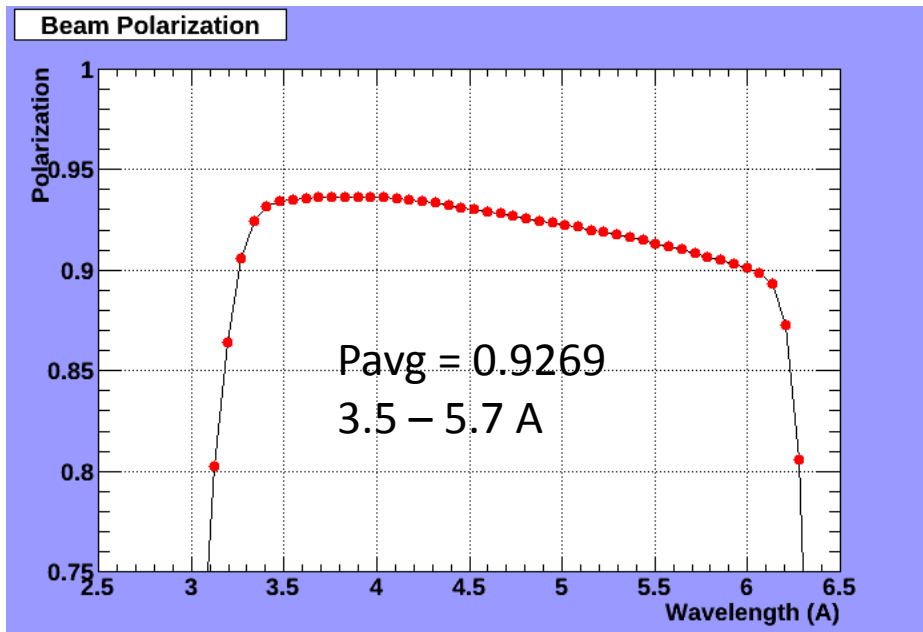
coefficient = 5099.45 +/- 499.345

best_fit = 9.14831 +/- 0.00128736

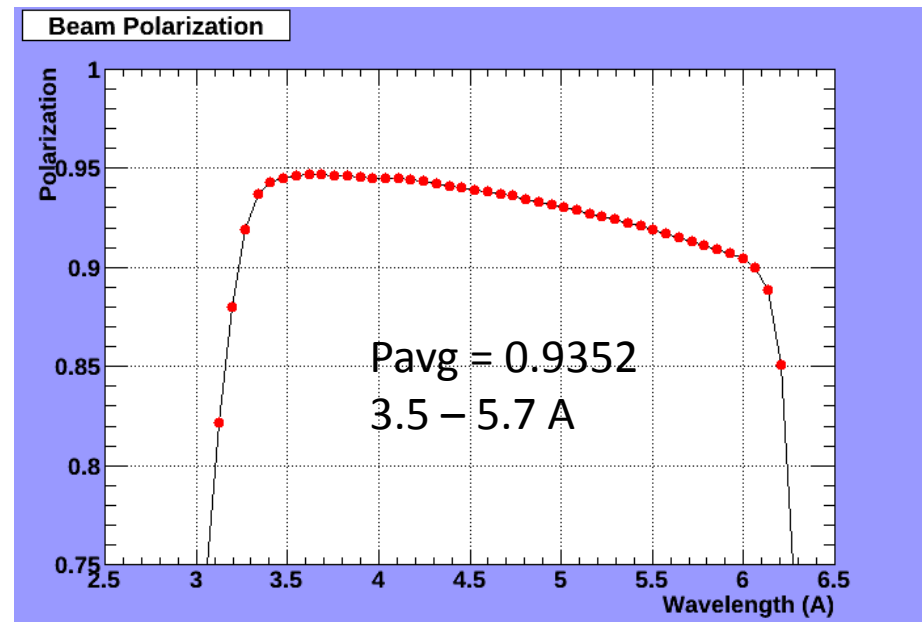
best_sfr = 35.5806 +/- 0.750129

Beam Polarization(Beam left 3.5 cm)

Dihep.cc(37551, 37638, 37454)

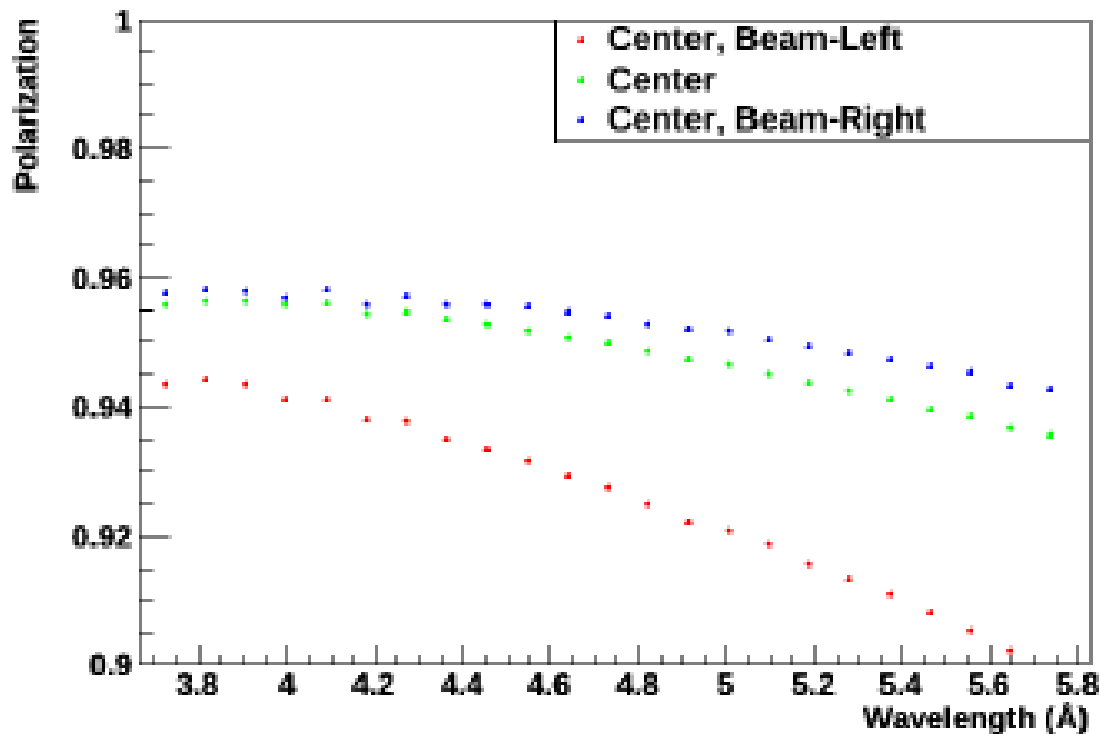


Beam Polarization from 6-23-2015
Measurement



Beam Polarization from 5-20-2015
Measurement

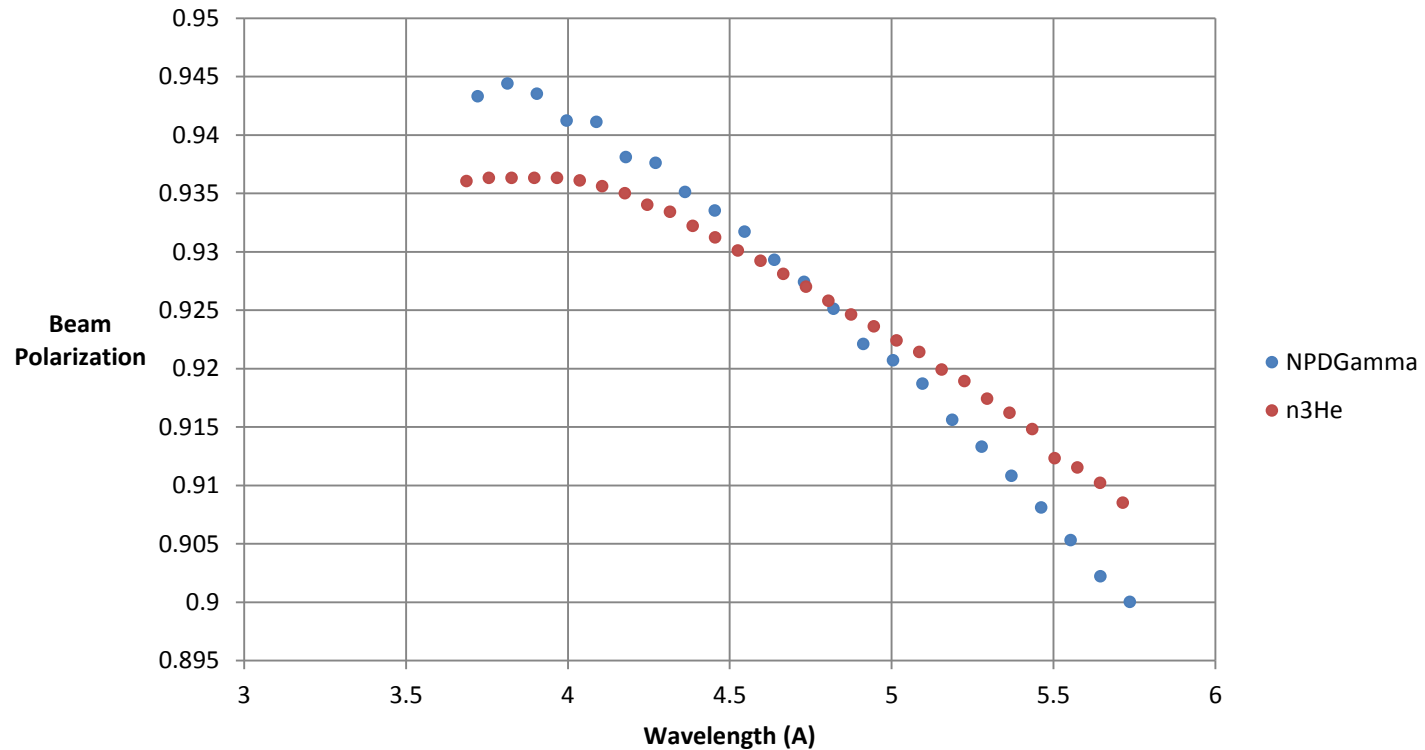
Beam Polarization from NPDGamma



Wavelength (Å)	Center Beam-Left
3.72224	0.943399
3.81384	0.944361
3.90543	0.943517
3.99702	0.941241
4.08861	0.941111
4.18021	0.938078
4.2718	0.937556
4.36339	0.935078
4.45499	0.933475
4.54658	0.931682
4.63817	0.929306
4.72977	0.92744
4.82136	0.925098
4.91295	0.922109
5.00455	0.92072
5.09614	0.918742
5.18773	0.915648
5.27933	0.913316
5.37092	0.910847
5.46251	0.908059
5.55411	0.905318
5.6457	0.902217
5.73729	0.899794

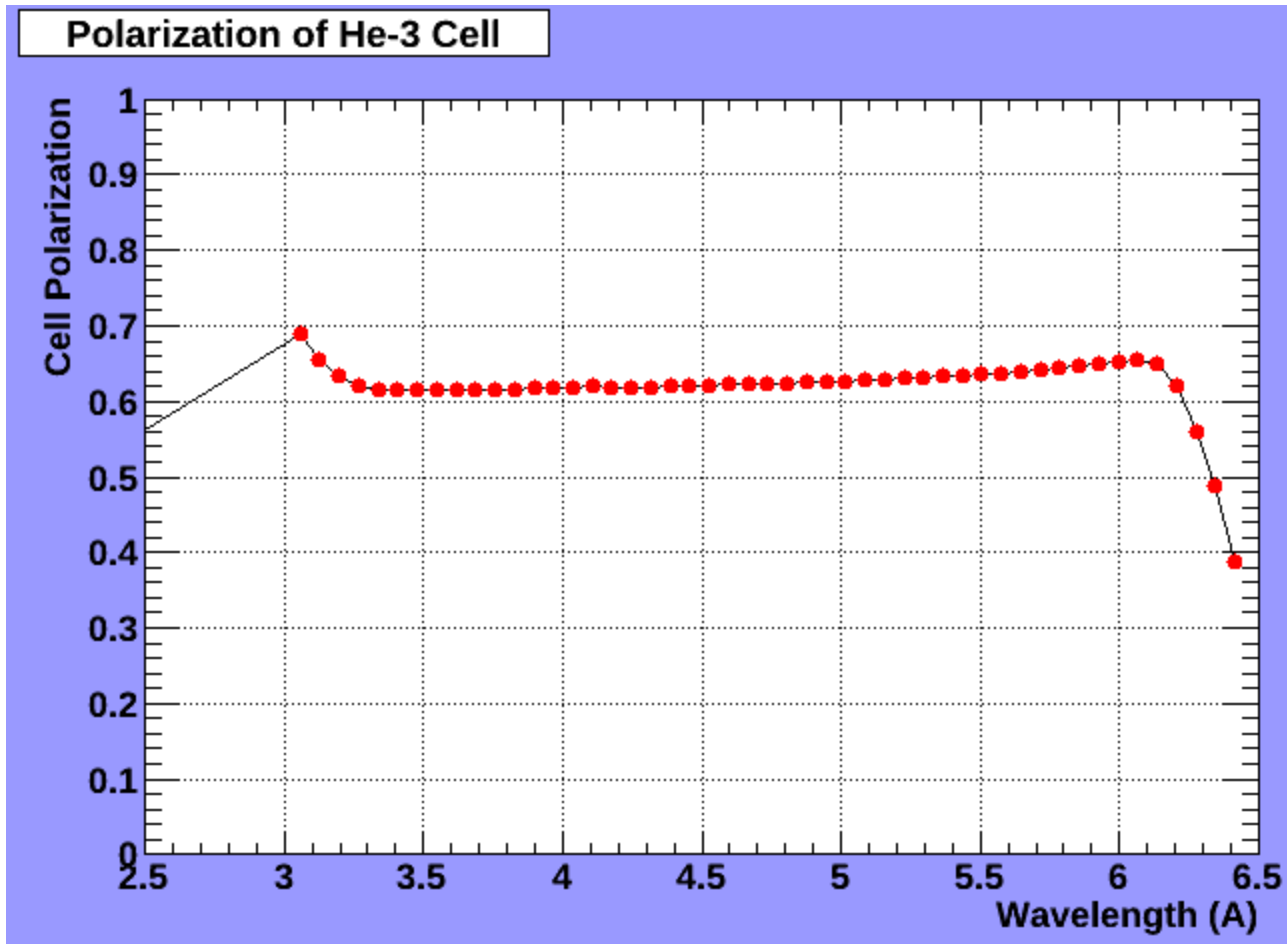
Comparison Plot

Comparison of n3He and NPDgamma Off-axis



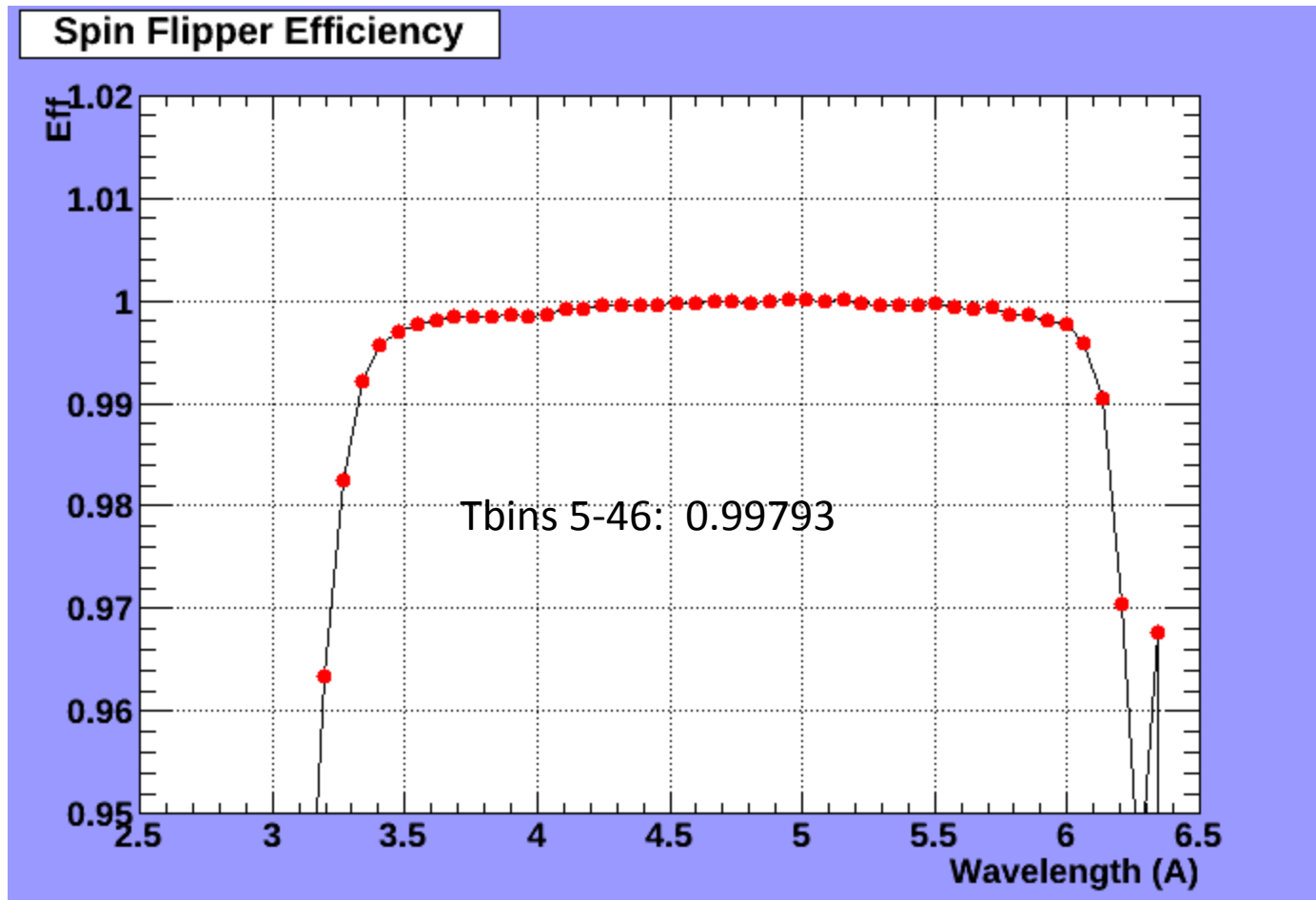
For both plots $P=0.926$

Cell Polarization



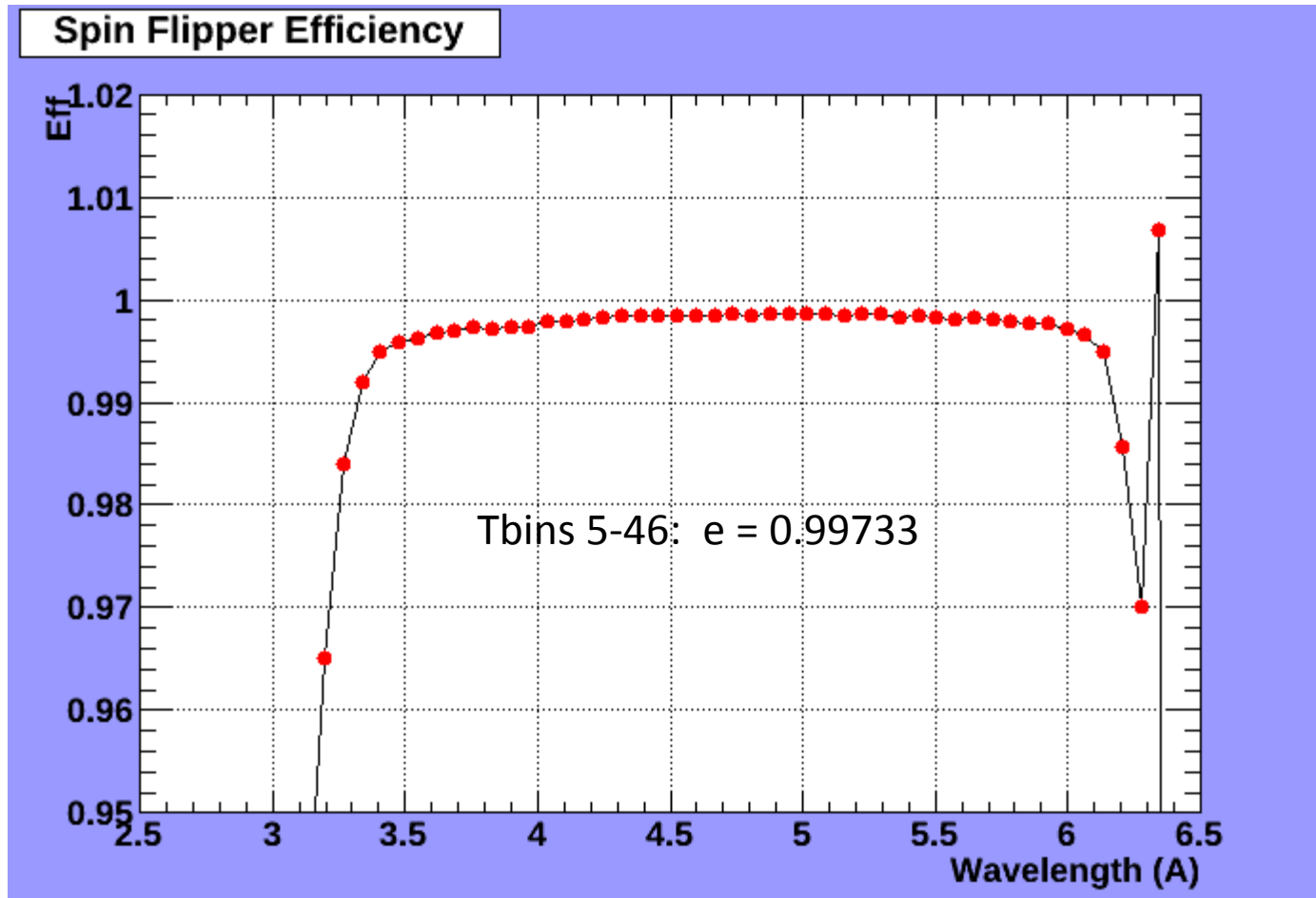
Dihep.cc(37551, 37638, 37454)

SF Efficiency (Beam up 3.5 cm)



Dirfsf.cc(37469, 37500, 37530, 37454)

SF Efficiency (Beam Left 3.5 cm)



Dirfsf.cc(37551, 37580, 37609, 37454)