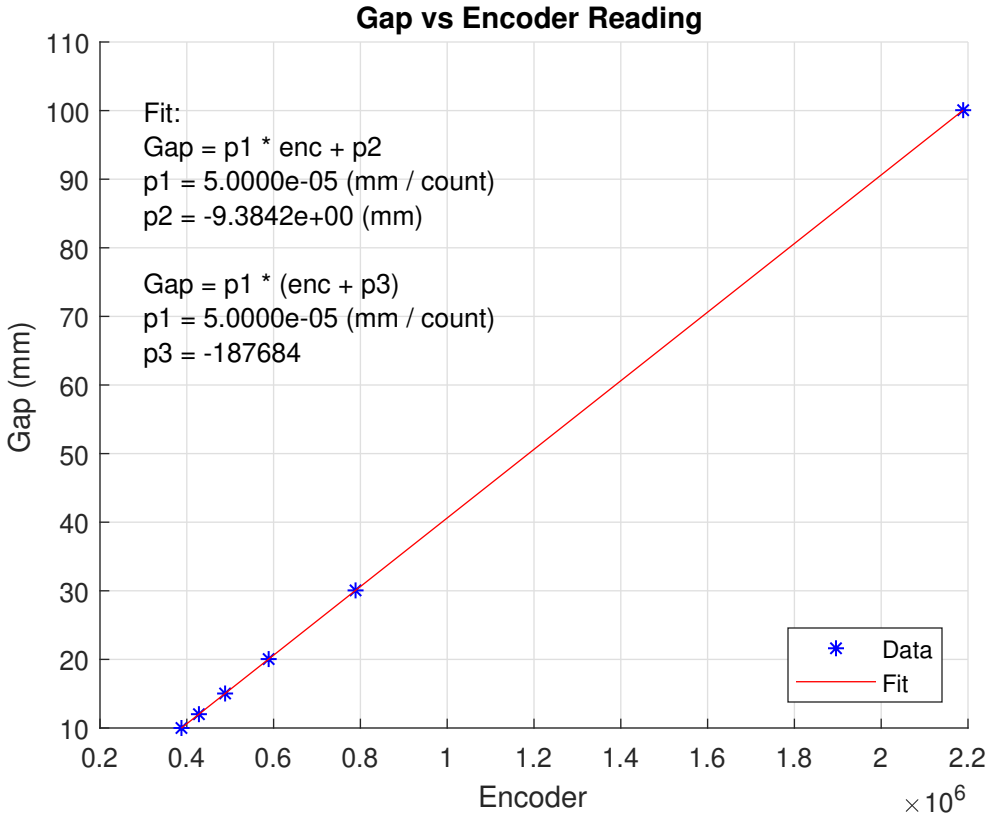
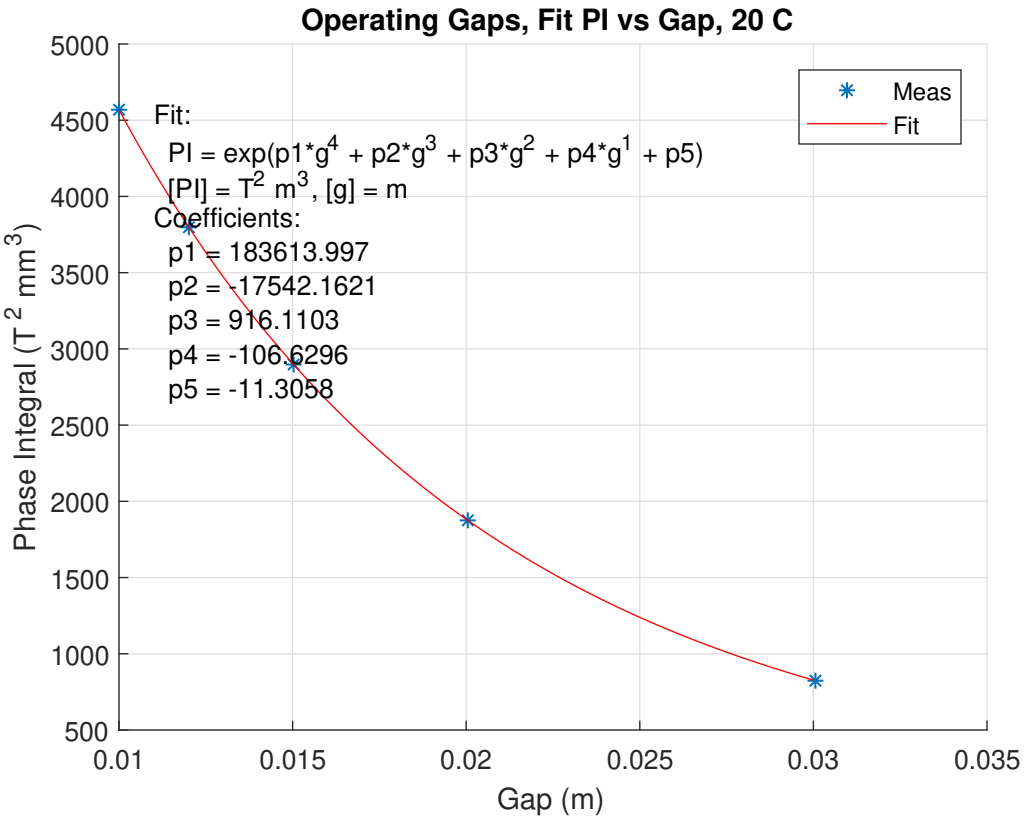
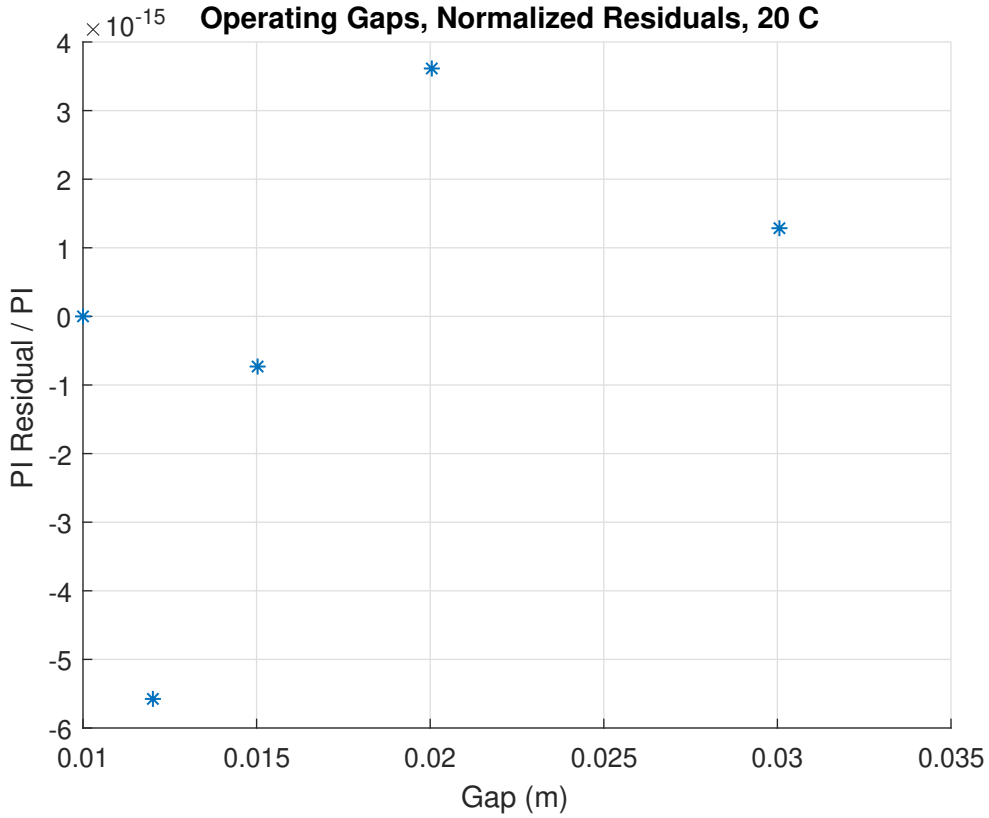
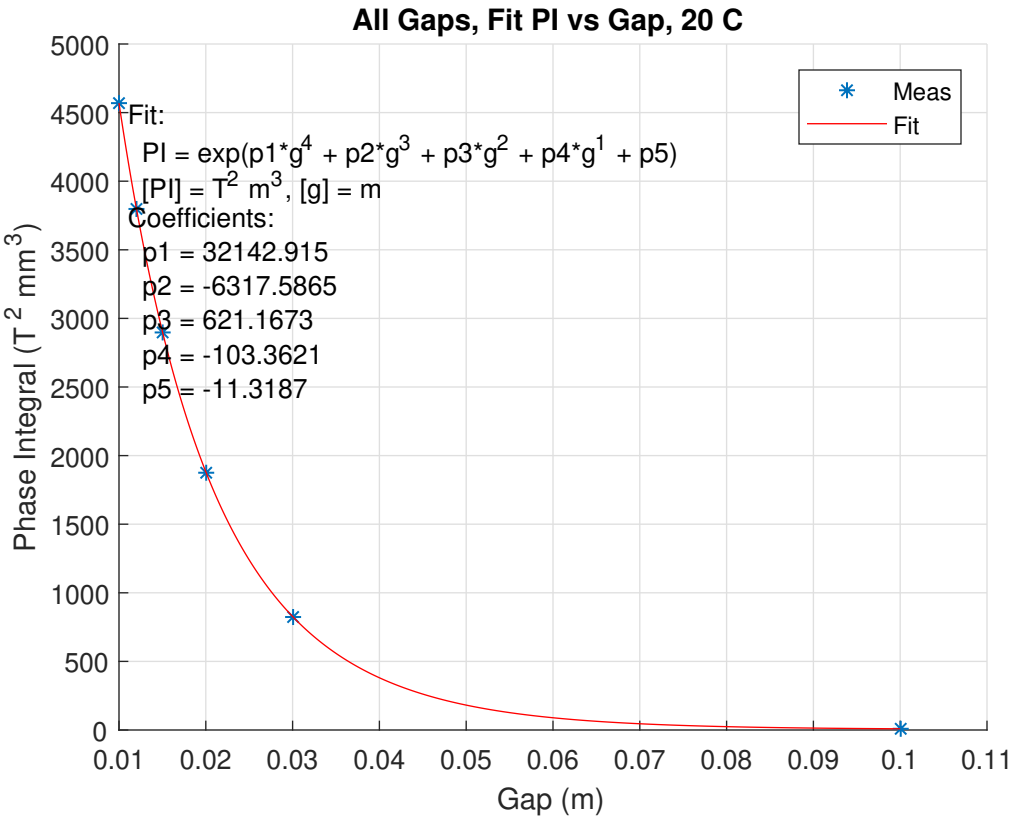
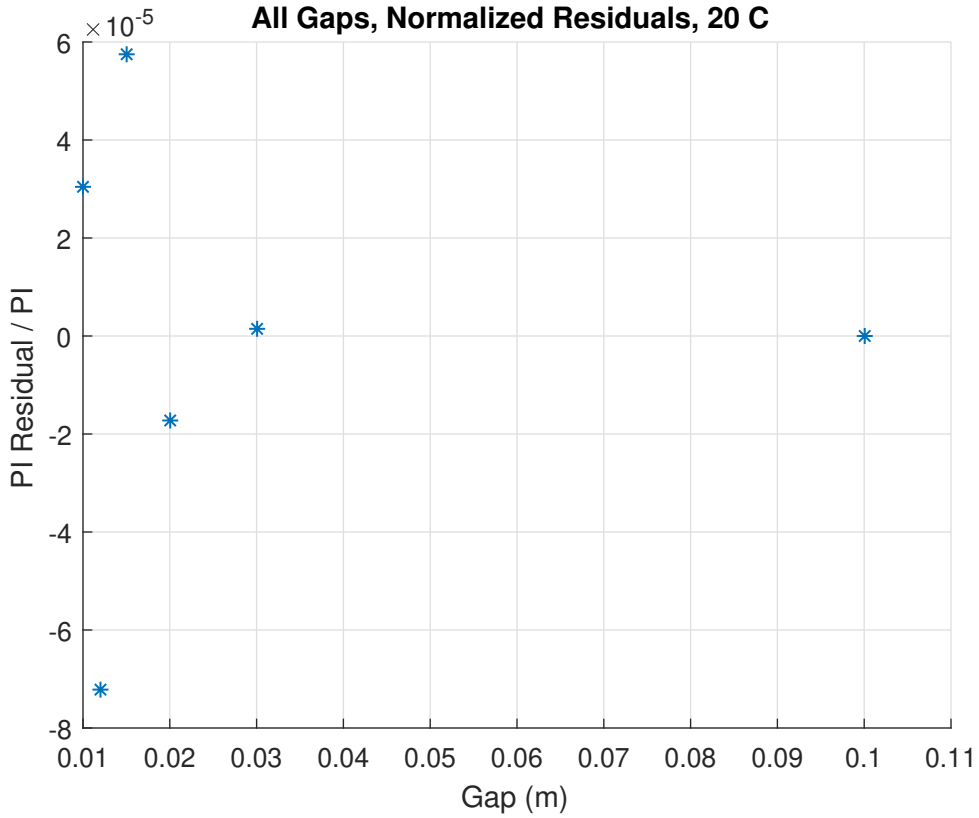
SLAC Magnetic Measurements#
Date: 08-19-2017#
Time: 11:12:35#

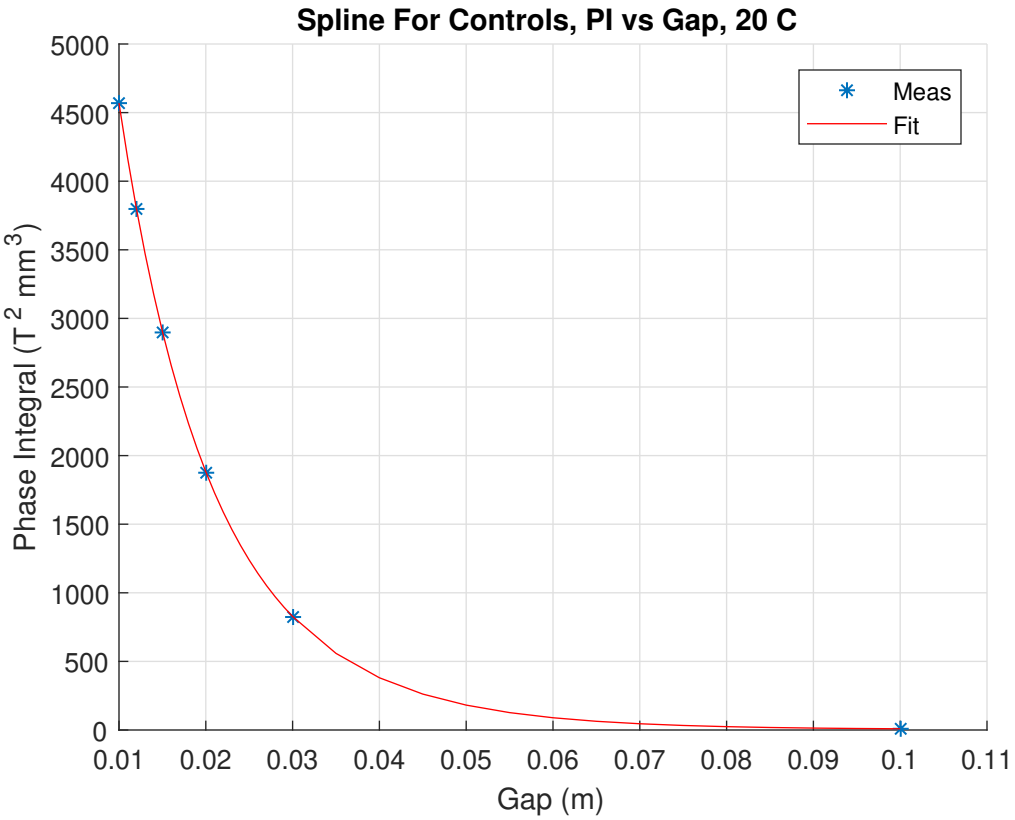

Gap vs Encoder Reading
Fit:
Gap = p1 * enc + p2
p1 = 5.0000e-05 (mm / count)
p2 = -9.3842e+00 (mm)
Gap = p1 * (enc + p3)
p1 = 5.0000e-05 (mm / count)
p3 = -187684
Data
Fit
Gap (mm)
Encoder
×10^6
110
100
90
80
70
60
50
40
30
20
10
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2

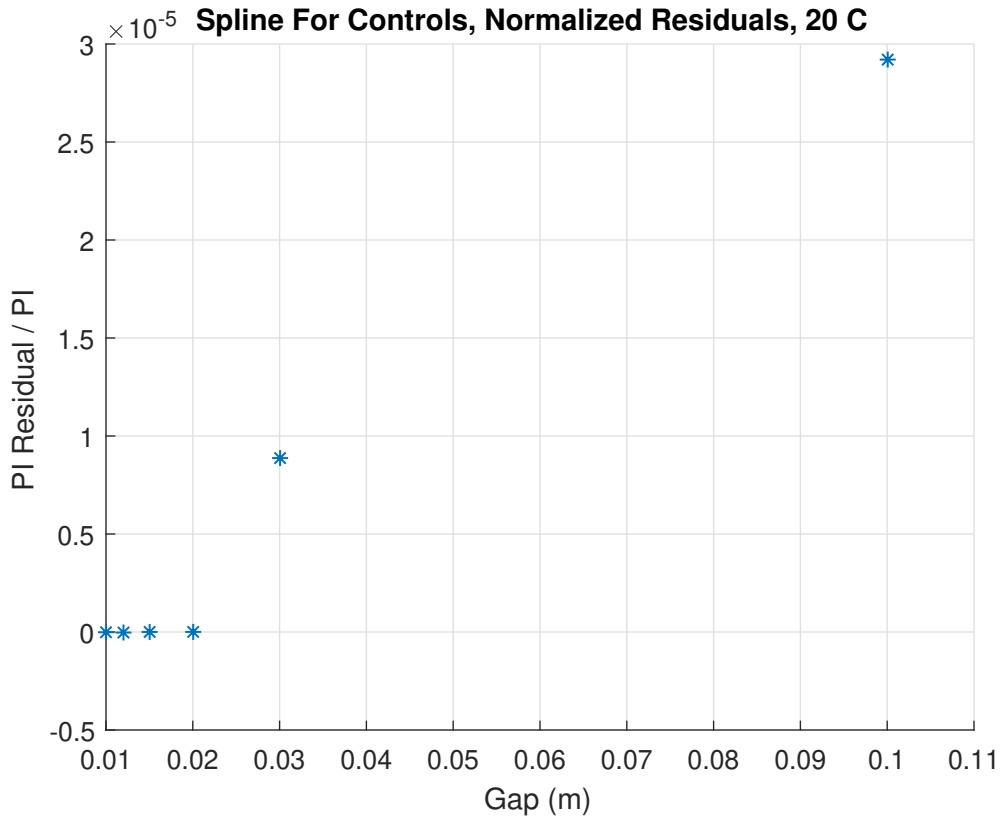

Operating Gaps, Fit PI vs Gap, 20 C
Meas
Fit
Fit:
PI = exp(p1*g^4 + p2*g^3 + p3*g^2 + p4*g^1 + p5)
[PI] = T^2 m^3, [g] = m
Coefficients:
p1 = 183613.997
p2 = -17542.1621
p3 = 916.1103
p4 = -106.6296
p5 = -11.3058
Phase Integral (T^2 mm^3)
Gap (m)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0.01
0.015
0.02
0.025
0.03
0.035


Operating Gaps, Normalized Residuals, 20 C
×10^-15
PI Residual / PI
4
3
2
1
0
-1
-2
-3
-4
-5
-6
0.01
0.015
0.02
0.025
0.03
0.035
Gap (m)


All Gaps, Fit PI vs Gap, 20 C
Meas
Fit
Fit:
PI = exp(p1*g^4 + p2*g^3 + p3*g^2 + p4*g^1 + p5)
[PI] = T^2 m^3, [g] = m
Coefficients:
p1 = 32142.915
p2 = -6317.5865
p3 = 621.1673
p4 = -103.3621
p5 = -11.3187
Phase Integral (T^-2 mm^3)
Gap (m)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11


All Gaps, Normalized Residuals, 20 C
×10^-5
6
4
2
0
-2
-4
-6
-8
PI Residual / PI
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
Gap (m)


Spline For Controls, PI vs Gap, 20 C
Meas
Fit
Phase Integral (T^2 mm^3)
Gap (m)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11


Spline For Controls, Normalized Residuals, 20 C
×10^-5
3
2.5
2
1.5
1
0.5
0
-0.5
PI Residual / PI
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
Gap (m)