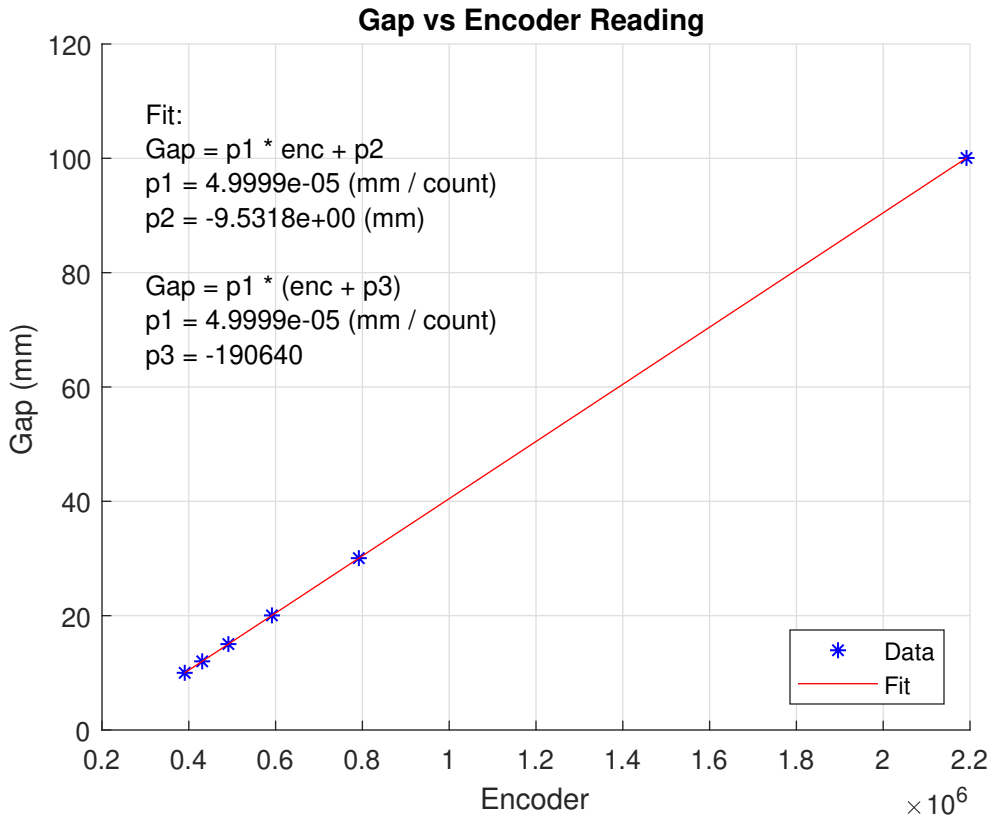
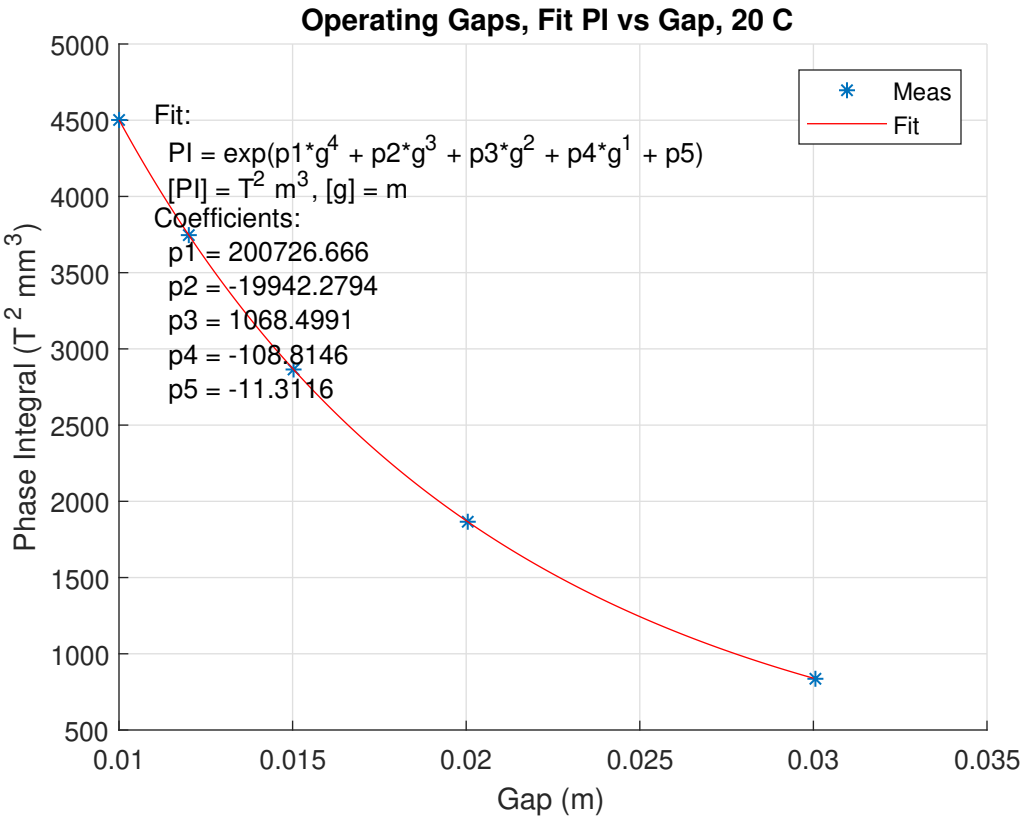
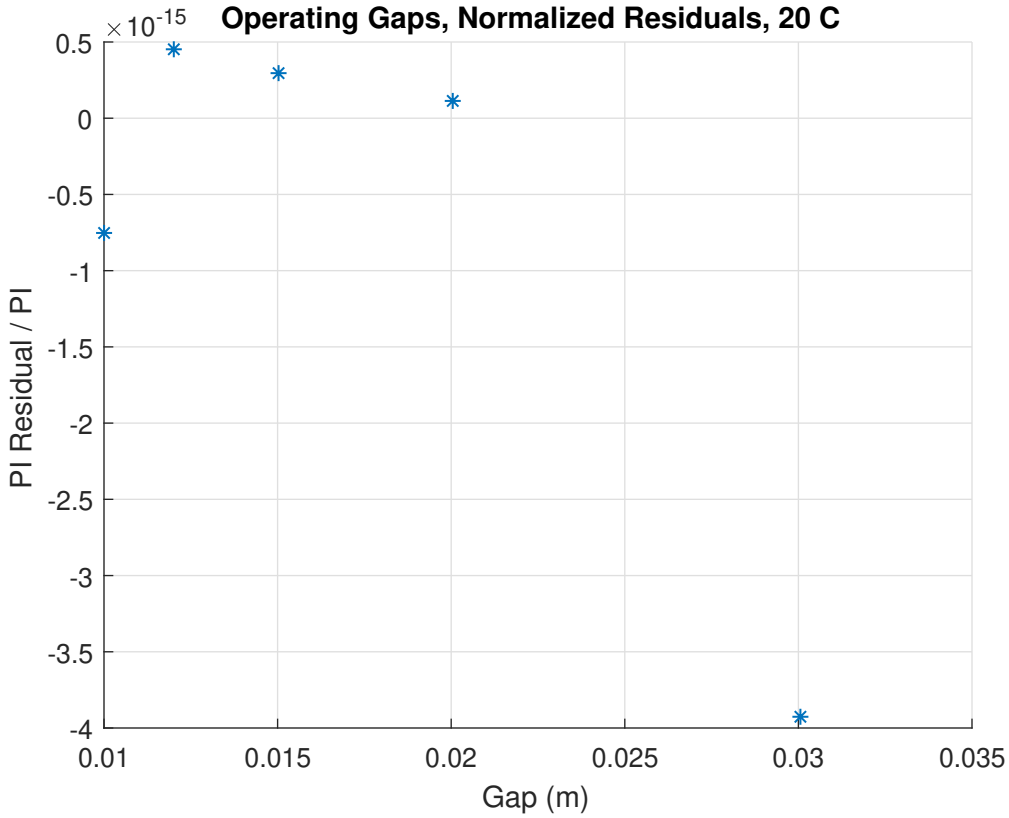
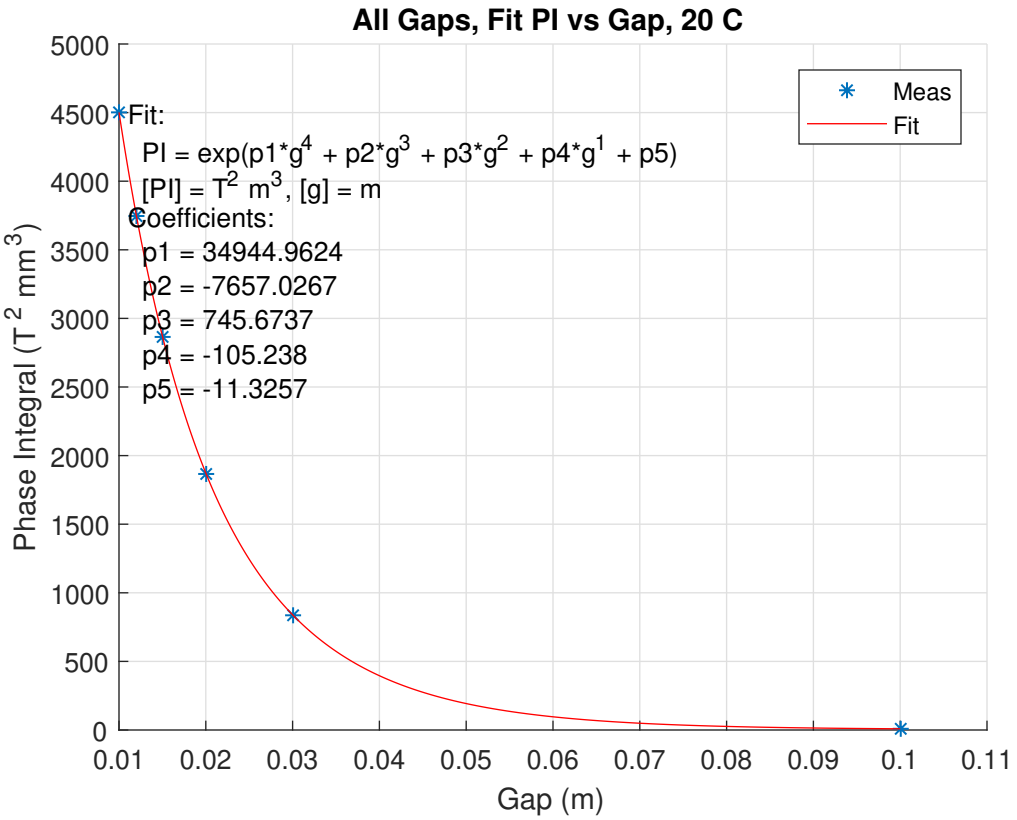
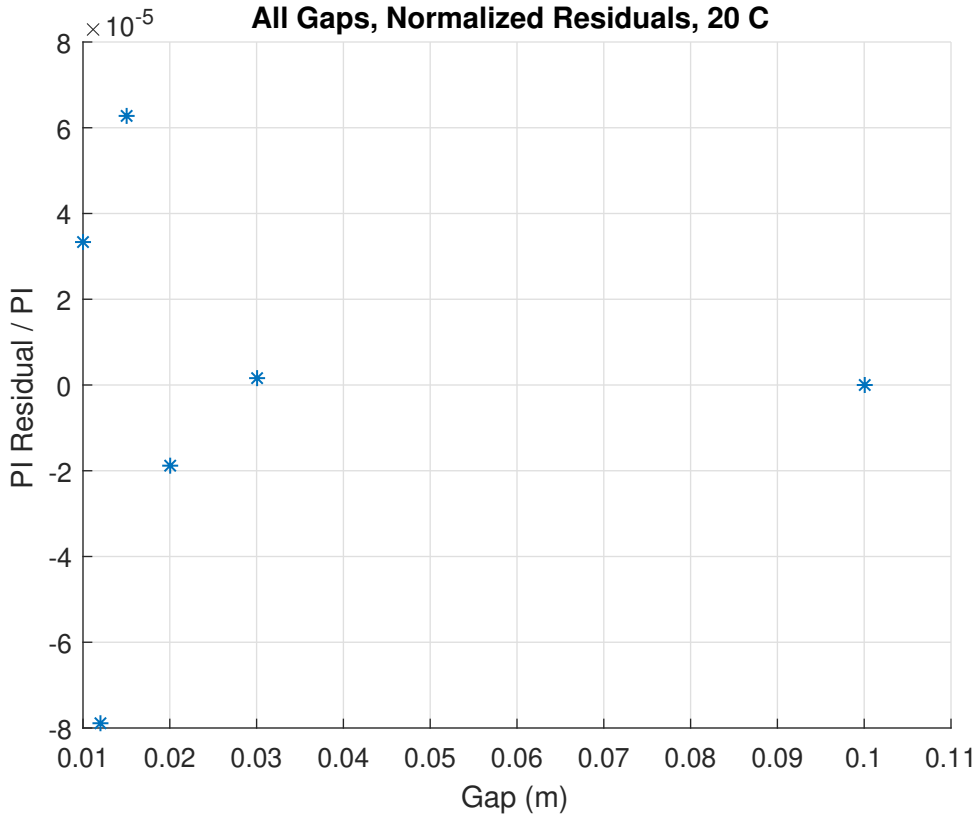
SLAC Magnetic Measurements#
Date: 08-19-2017#
Time: 11:10:47#

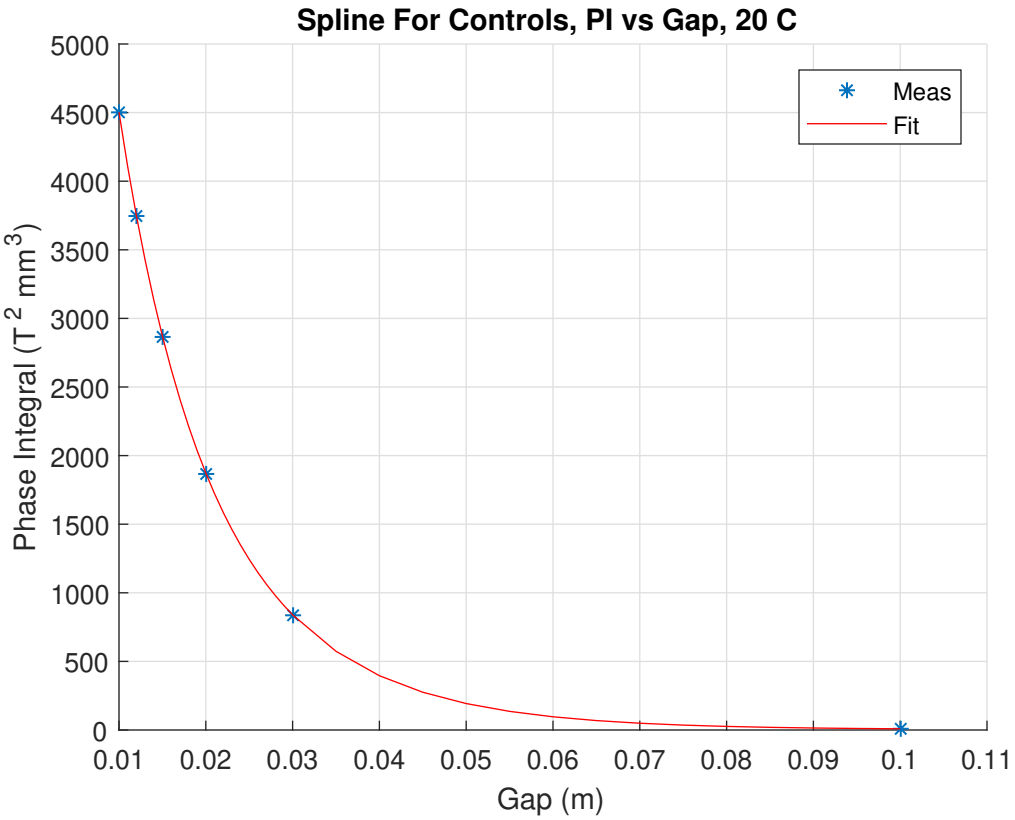

Gap vs Encoder Reading
Fit:
Gap = p1 * enc + p2
p1 = 4.9999e-05 (mm / count)
p2 = -9.5318e+00 (mm)
Gap = p1 * (enc + p3)
p1 = 4.9999e-05 (mm / count)
p3 = -190640
Gap (mm)
Encoder
×10^6
Data
Fit
0
20
40
60
80
100
120
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2

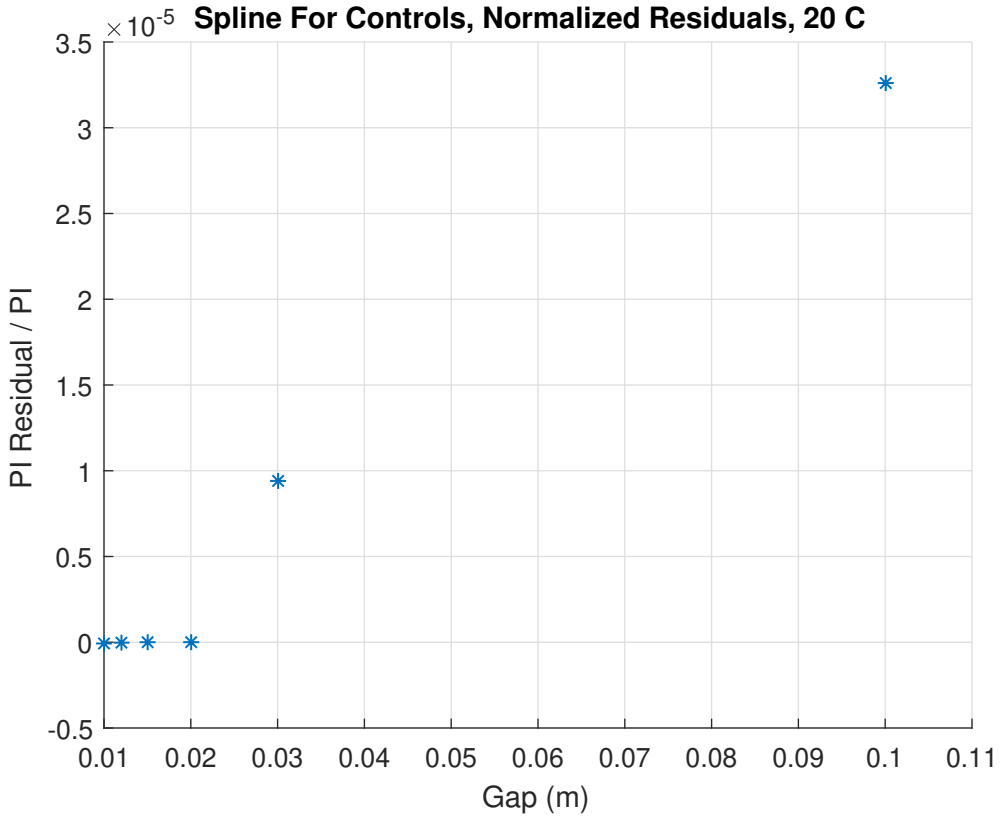

Operating Gaps, Fit PI vs Gap, 20 C
Meas
Fit
Fit:
PI = exp(p1*g^4 + p2*g^3 + p3*g^2 + p4*g^1 + p5)
[PI] = T^2 m^3, [g] = m
Coefficients:
p1 = 200726.666
p2 = -19942.2794
p3 = 1068.4991
p4 = -108.8146
p5 = -11.3116
Phase Integral (T^2 mm^3)
Gap (m)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0.01
0.015
0.02
0.025
0.03
0.035


Operating Gaps, Normalized Residuals, 20 C
×10^-15
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
PI Residual / PI
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 = 34944.9624
p2 = -7657.0267
p3 = 745.6737
p4 = -105.238
p5 = -11.3257
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
8
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
3.5
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)