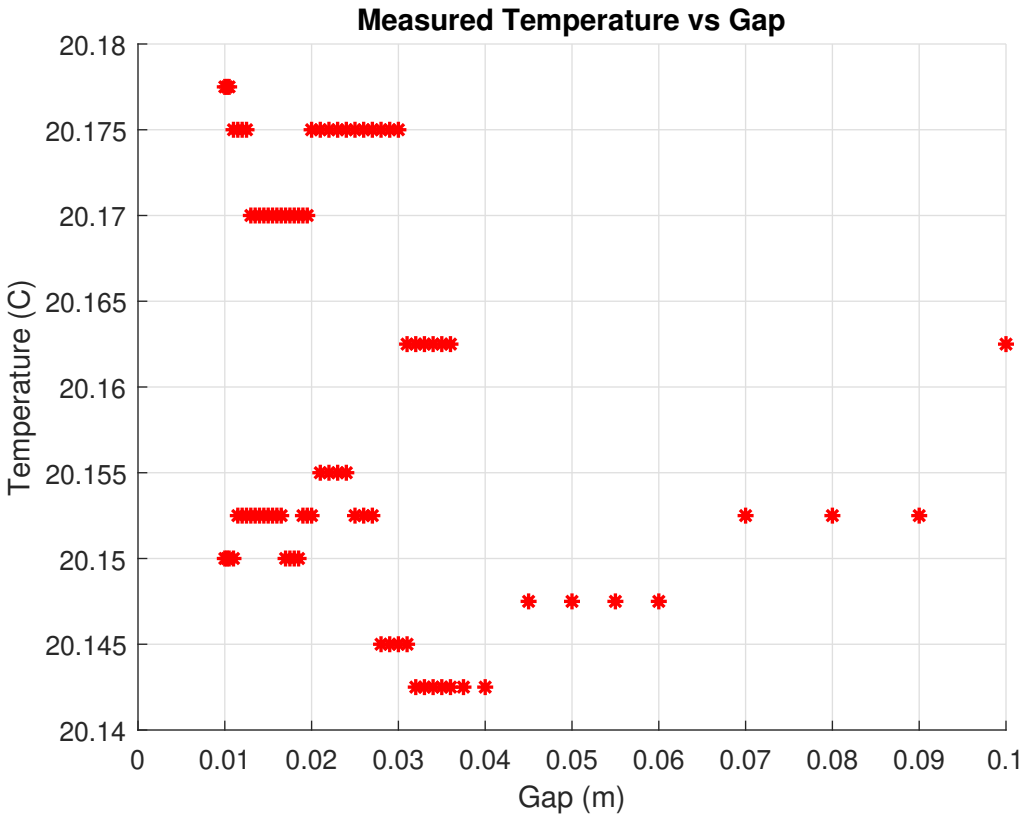
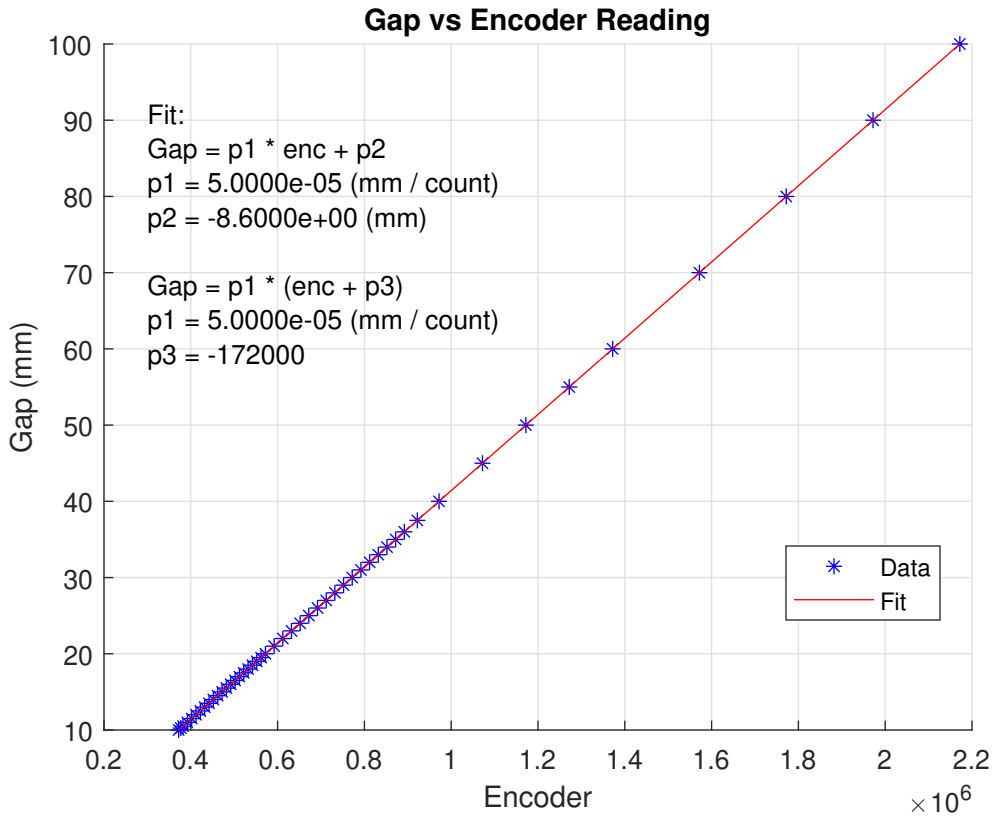
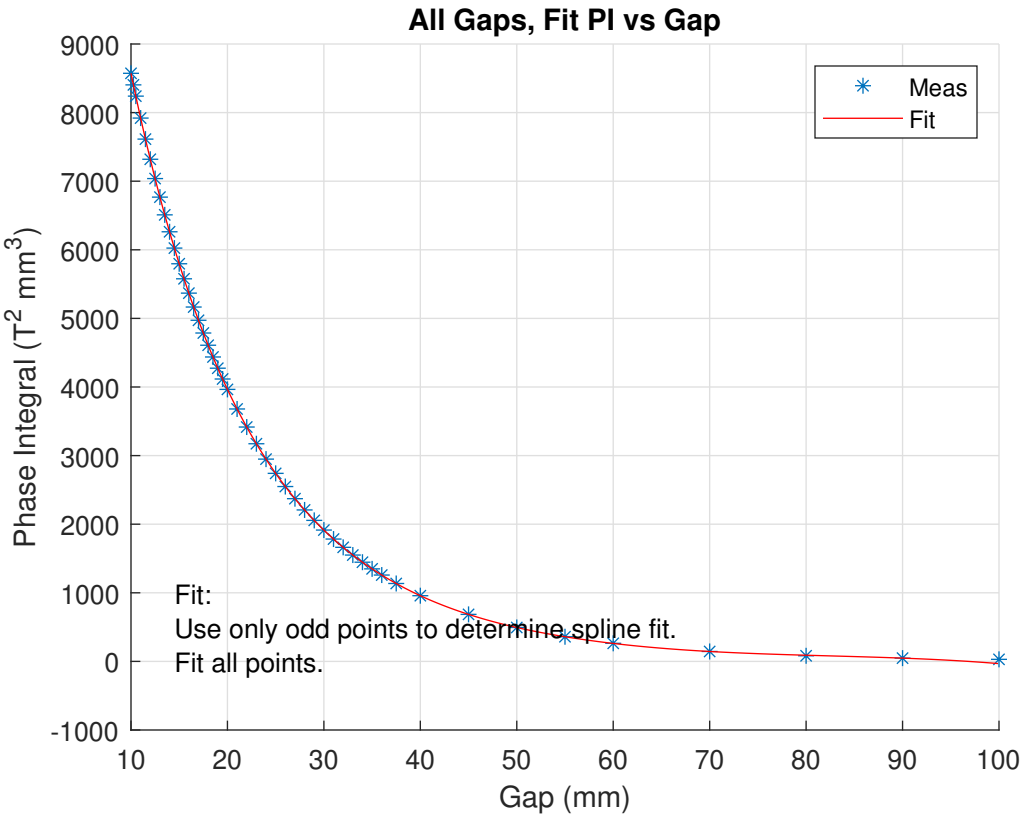
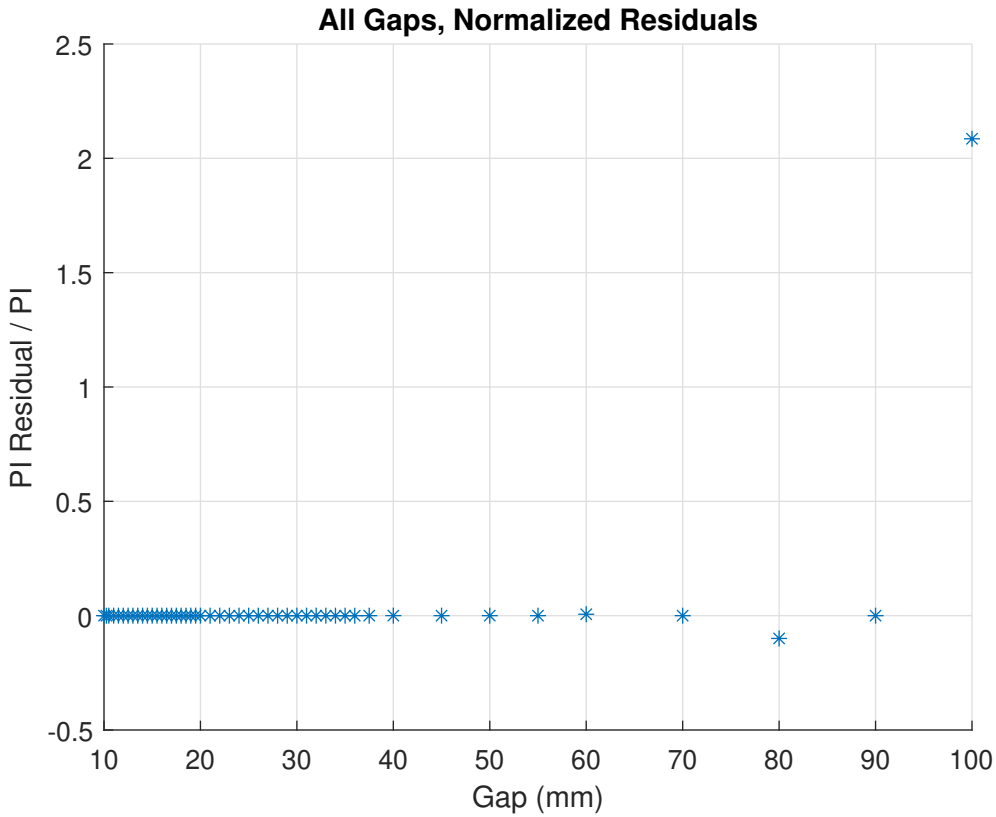
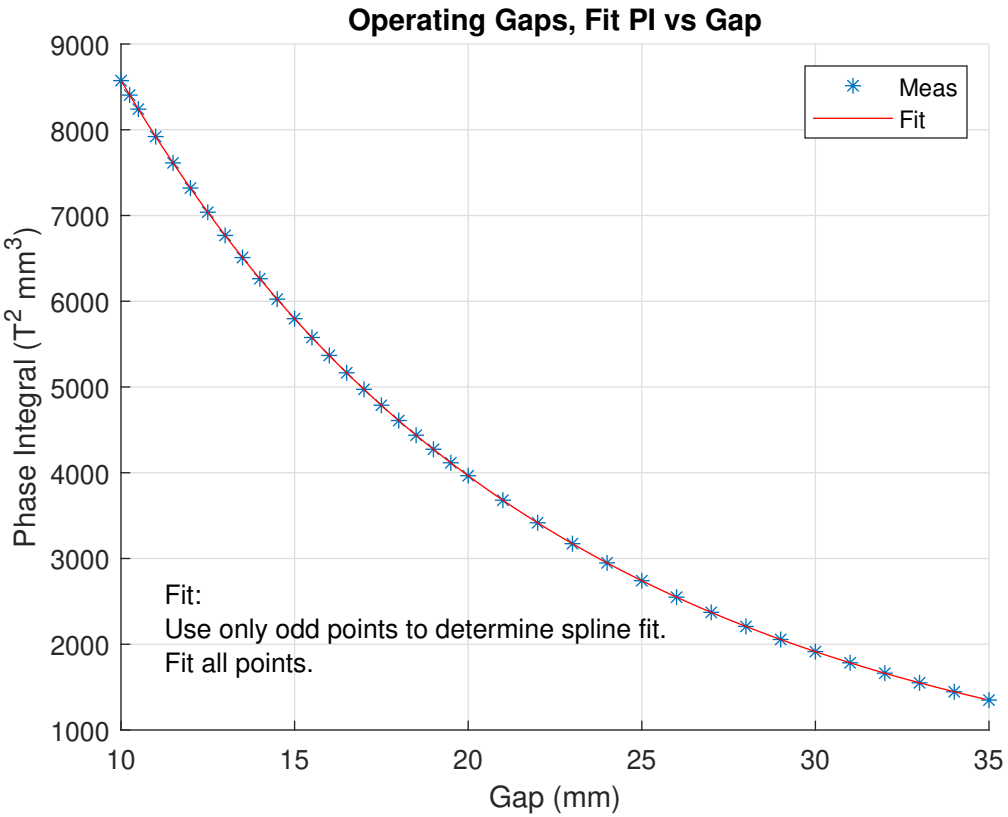
SLAC Magnetic Measurements
Date: 08-18-2026
Time: 16:43:49

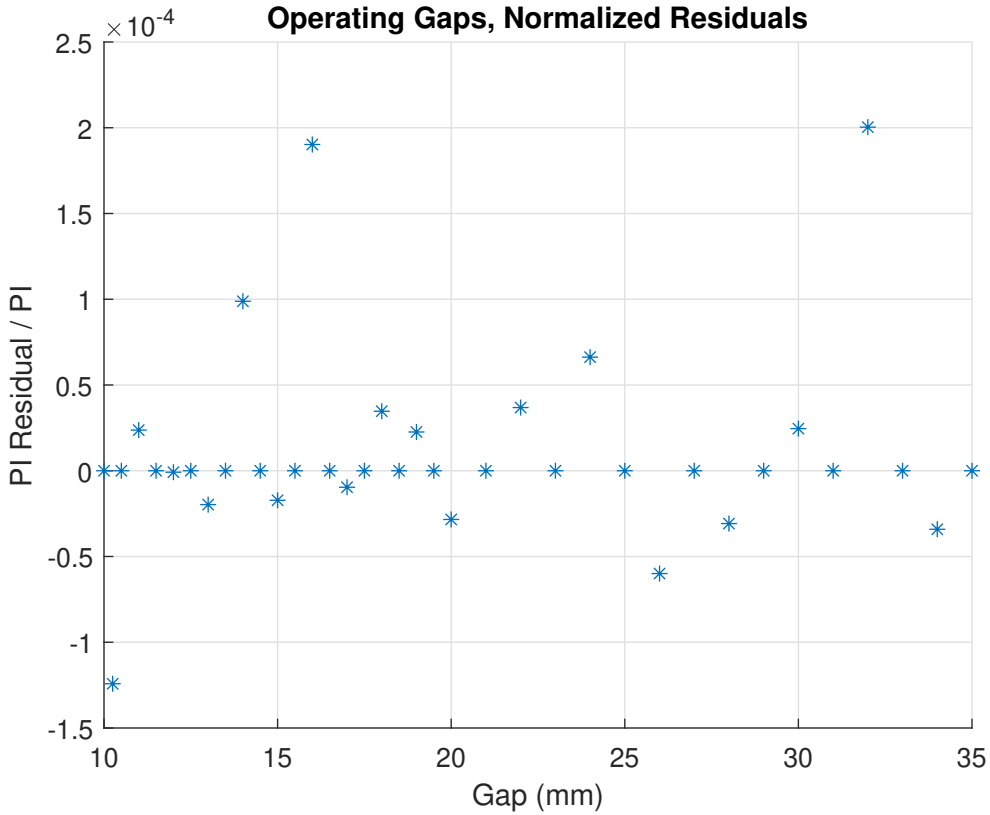

Measured Temperature vs Gap
Temperature (C)
20.18
20.175
20.17
20.165
20.16
20.155
20.15
20.145
20.14
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
Gap (m)

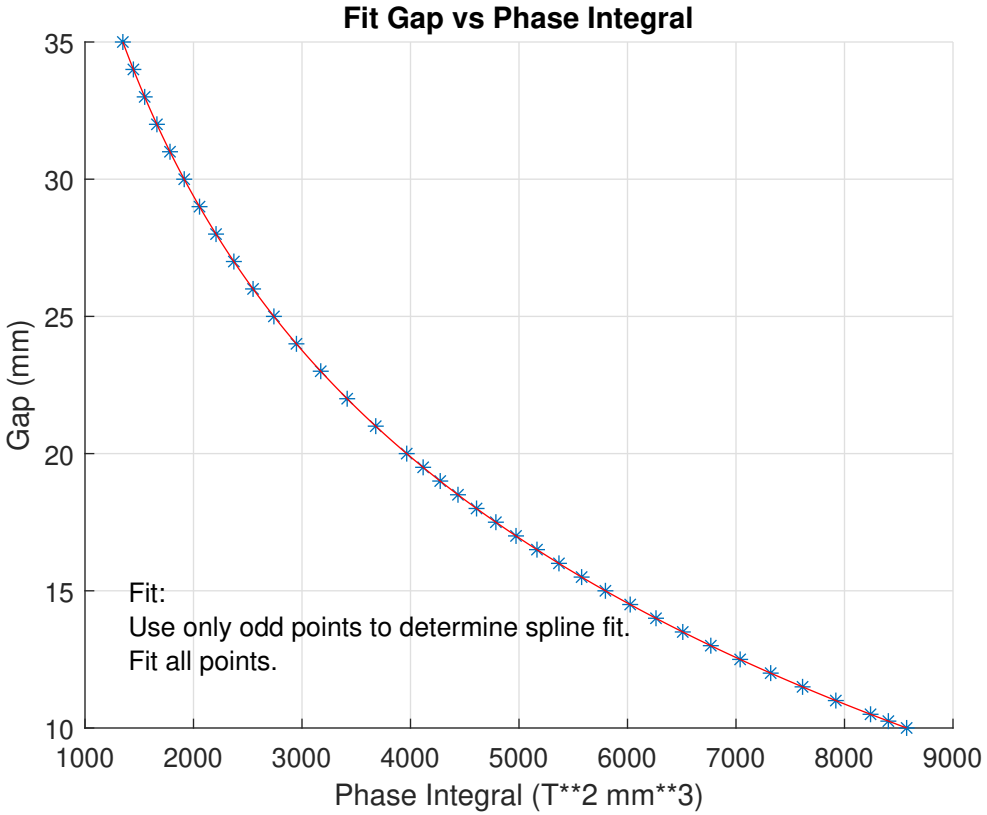

Gap vs Encoder Reading
Fit:
Gap = p1 * enc + p2
p1 = 5.0000e-05 (mm / count)
p2 = -8.6000e+00 (mm)
Gap = p1 * (enc + p3)
p1 = 5.0000e-05 (mm / count)
p3 = -172000
Data
Fit
Gap (mm)
Encoder
×10^6
100
90
80
70
60
50
40
30
20
10
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2

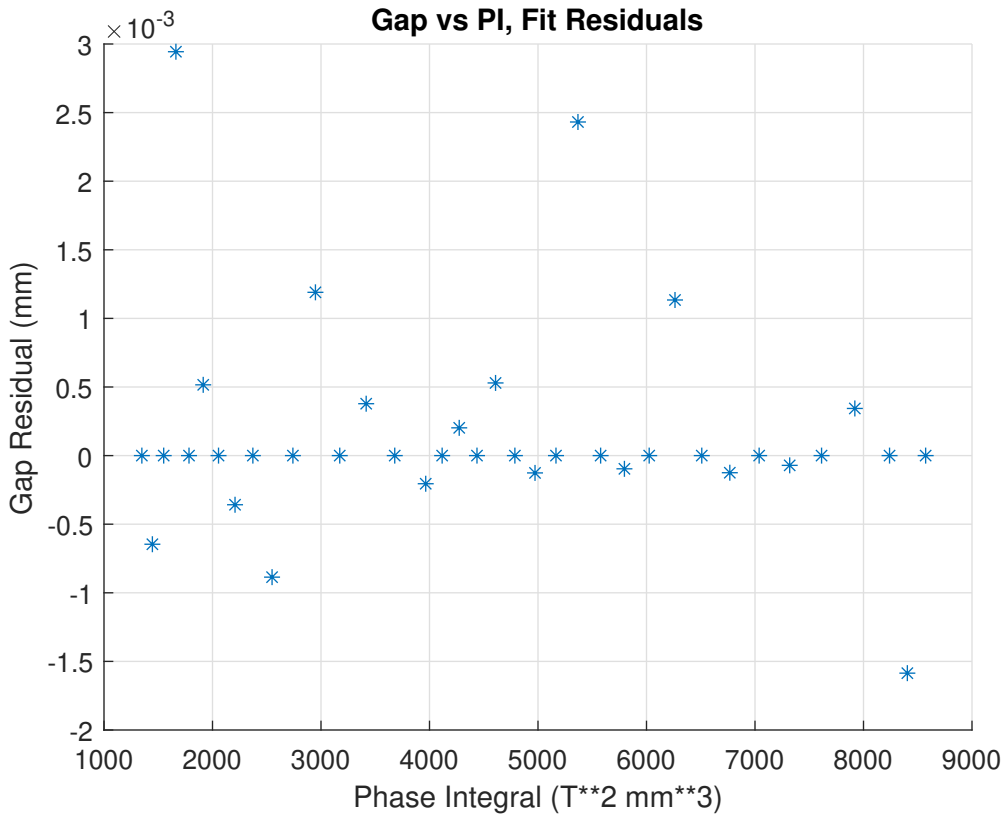

All Gaps, Fit PI vs Gap
Meas
Fit
Phase Integral (T^2 mm^3)
Gap (mm)
Fit:
Use only odd points to determine spline fit.
Fit all points.
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
10
20
30
40
50
60
70
80
90
100

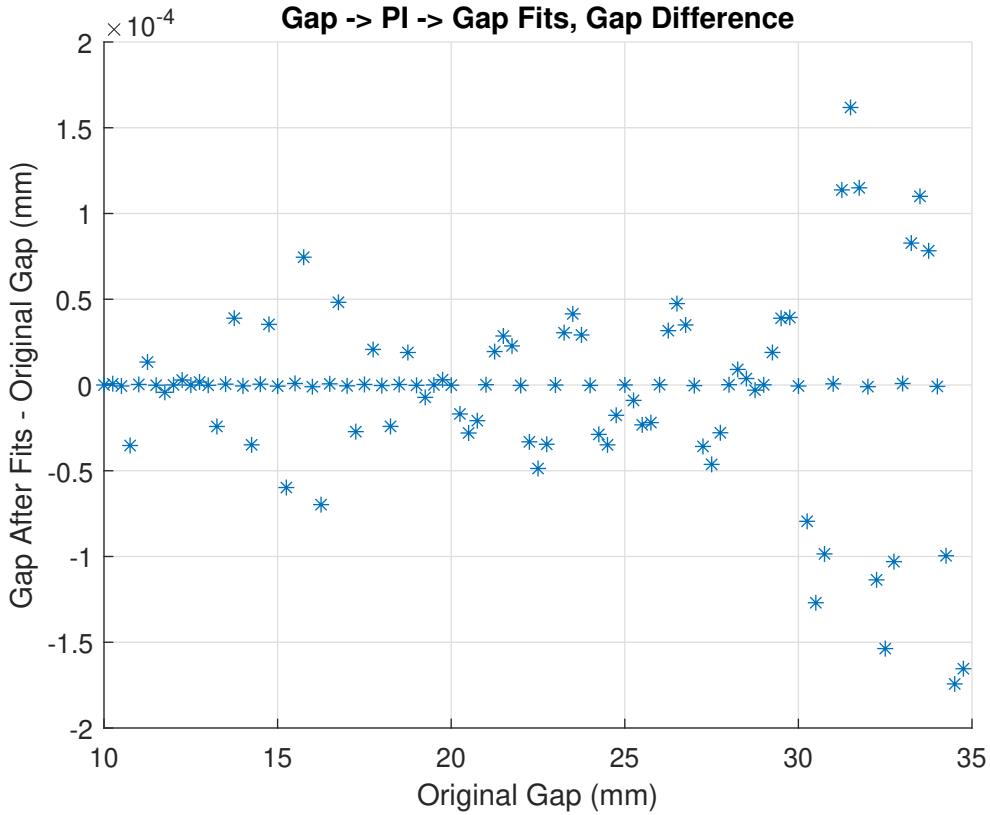

All Gaps, Normalized Residuals
PI Residual / PI
Gap (mm)
2.5
2
1.5
1
0.5
0
-0.5
10
20
30
40
50
60
70
80
90
100

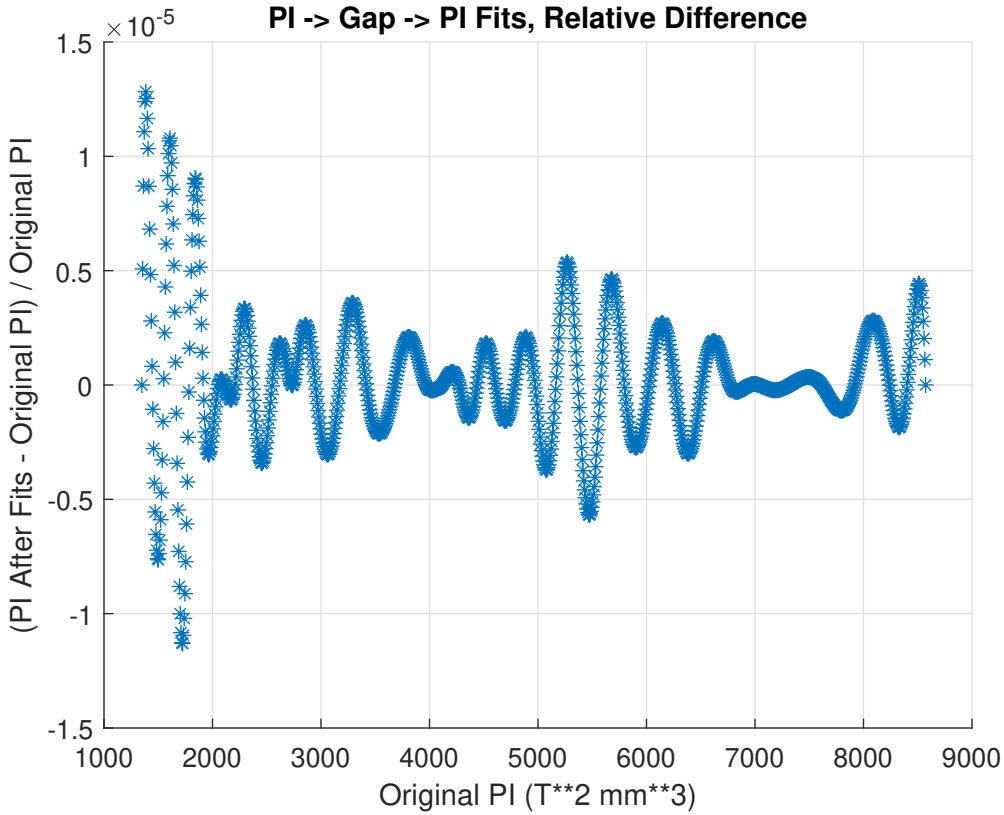

Operating Gaps, Fit PI vs Gap
Meas
Fit
Phase Integral (T^2 mm^3)
Gap (mm)
9000
8000
7000
6000
5000
4000
3000
2000
1000
10
15
20
25
30
35
Fit:
Use only odd points to determine spline fit.
Fit all points.

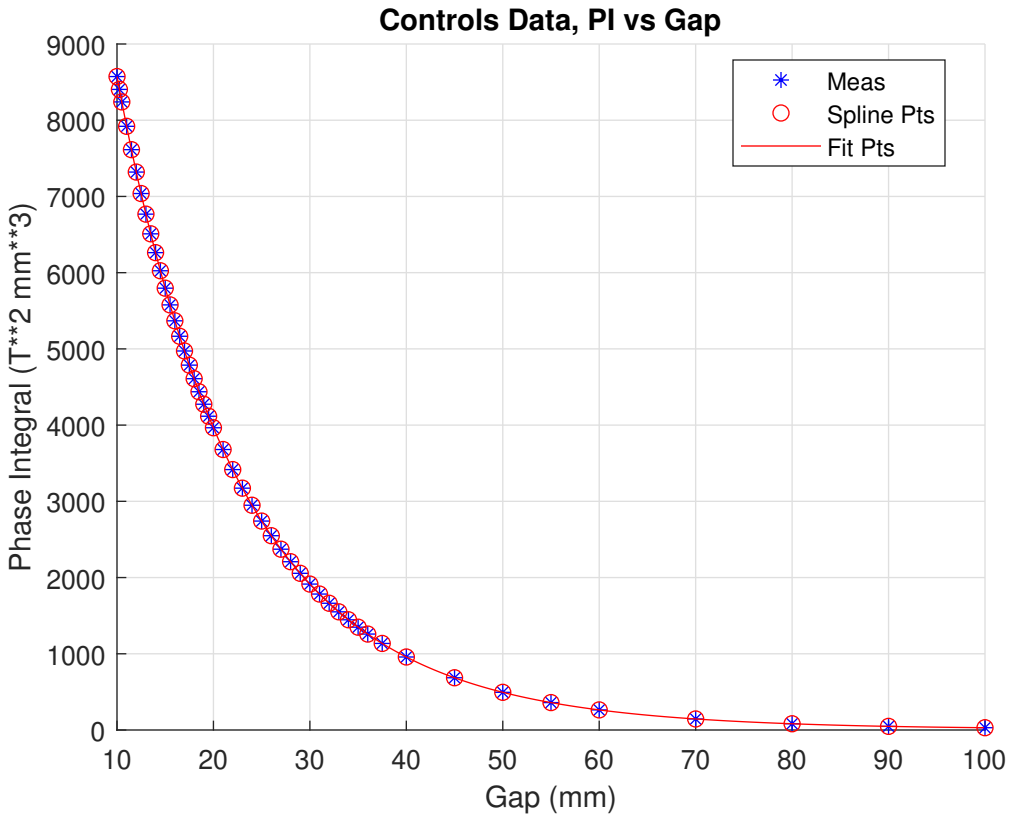

Operating Gaps, Normalized Residuals
×10^-4
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
PI Residual / PI
10
15
20
25
30
35
Gap (mm)

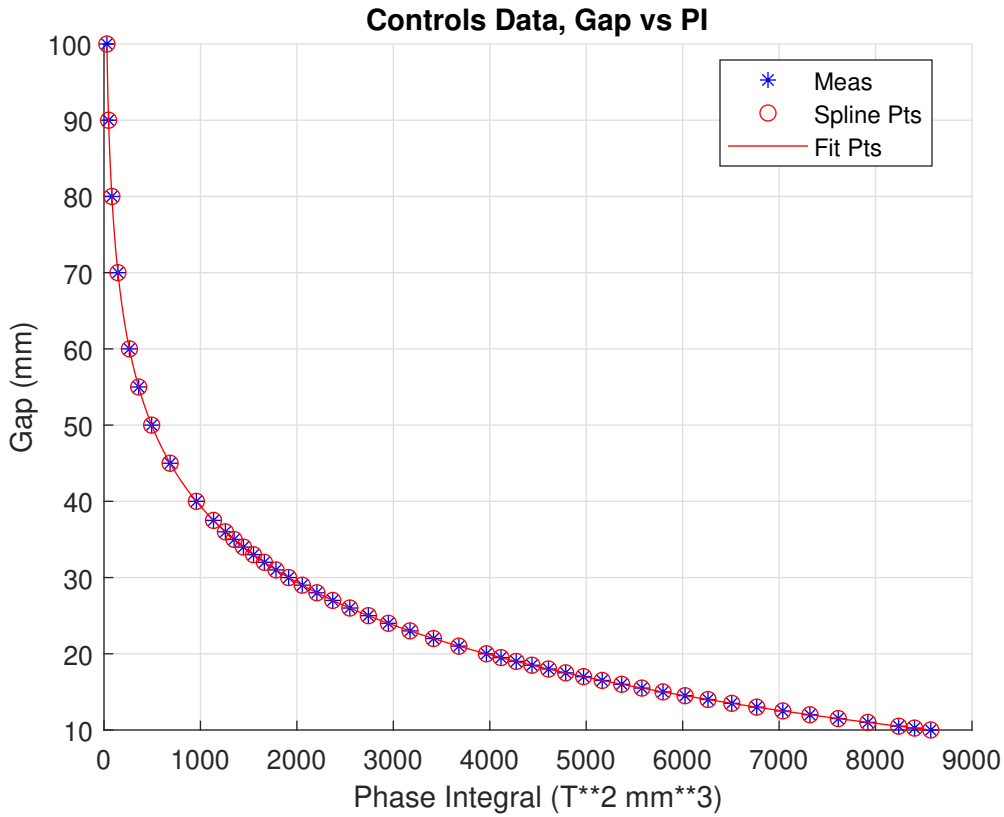

Fit Gap vs Phase Integral
Gap (mm)
35
30
25
20
15
10
1000
2000
3000
4000
5000
6000
7000
8000
9000
Phase Integral (T**2 mm**3)
Fit:
Use only odd points to determine spline fit.
Fit all points.


Gap vs PI, Fit Residuals
×10-3
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
Gap Residual (mm)
1000
2000
3000
4000
5000
6000
7000
8000
9000
Phase Integral (T**2 mm**3)


Gap -> PI -> Gap Fits, Gap Difference
×10^-4
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
Gap After Fits - Original Gap (mm)
10
15
20
25
30
35
Original Gap (mm)


PI -> Gap -> PI Fits, Relative Difference
×10^-5
1.5
1
0.5
0
-0.5
-1
-1.5
(PI After Fits - Original PI) / Original PI
1000
2000
3000
4000
5000
6000
7000
8000
9000
Original PI (T**2 mm**3)


Controls Data, PI vs Gap
Meas
Spline Pts
Fit Pts
Phase Integral (T**2 mm**3)
Gap (mm)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
10
20
30
40
50
60
70
80
90
100


Controls Data, Gap vs PI
Meas
Spline Pts
Fit Pts
Gap (mm)
Phase Integral (T**2 mm**3)
100
90
80
70
60
50
40
30
20
10
0
1000
2000
3000
4000
5000
6000
7000
8000
9000