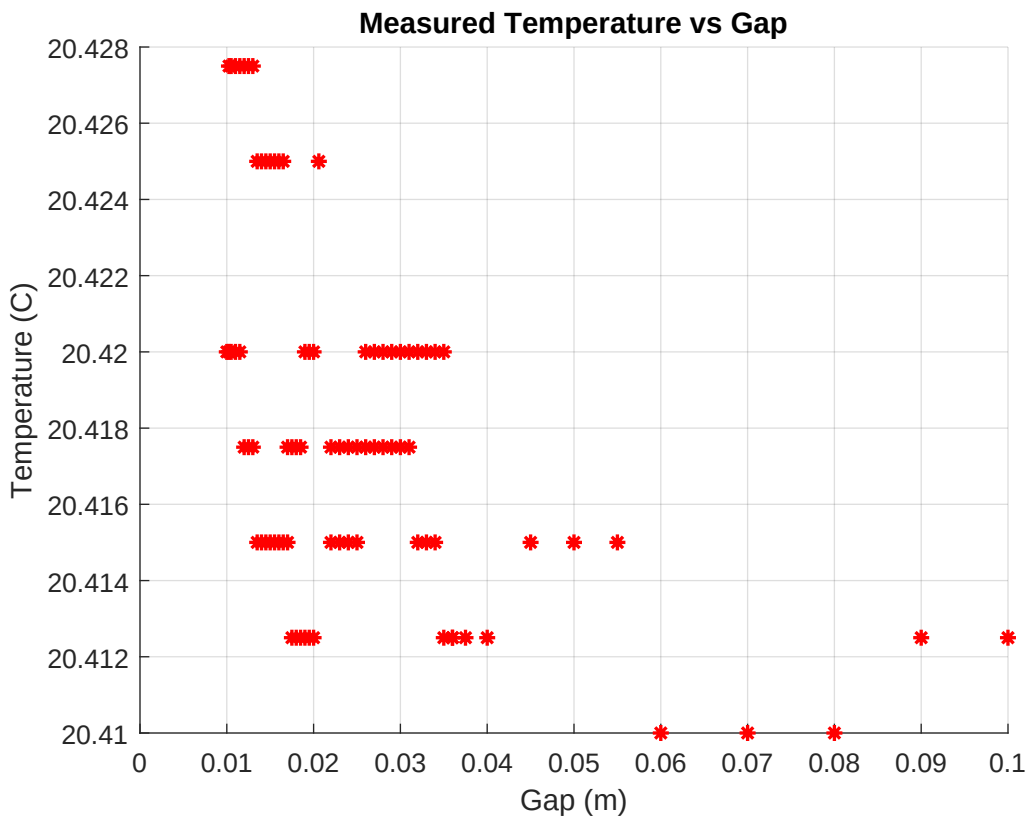
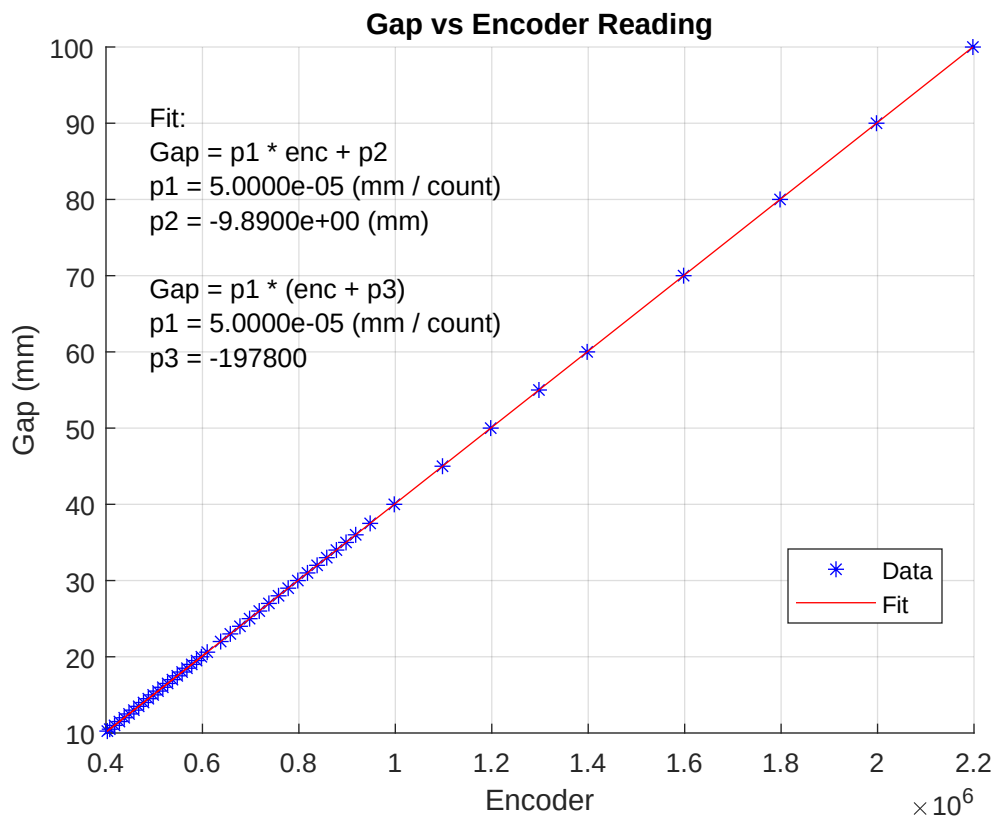
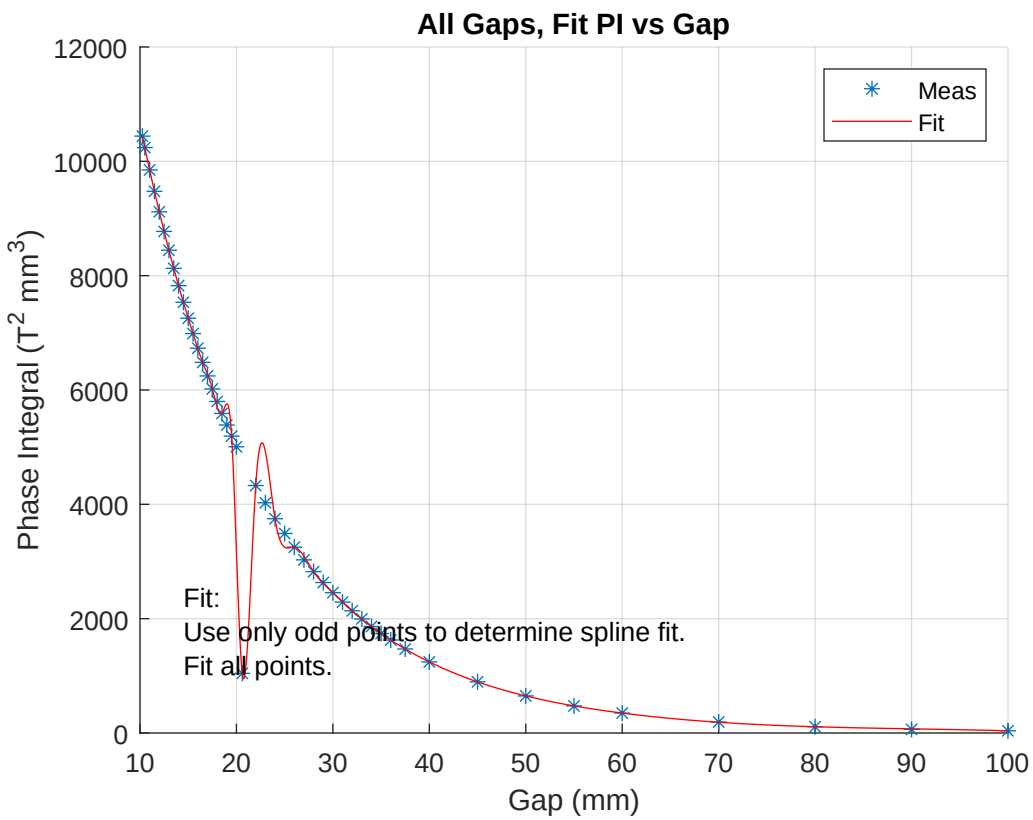
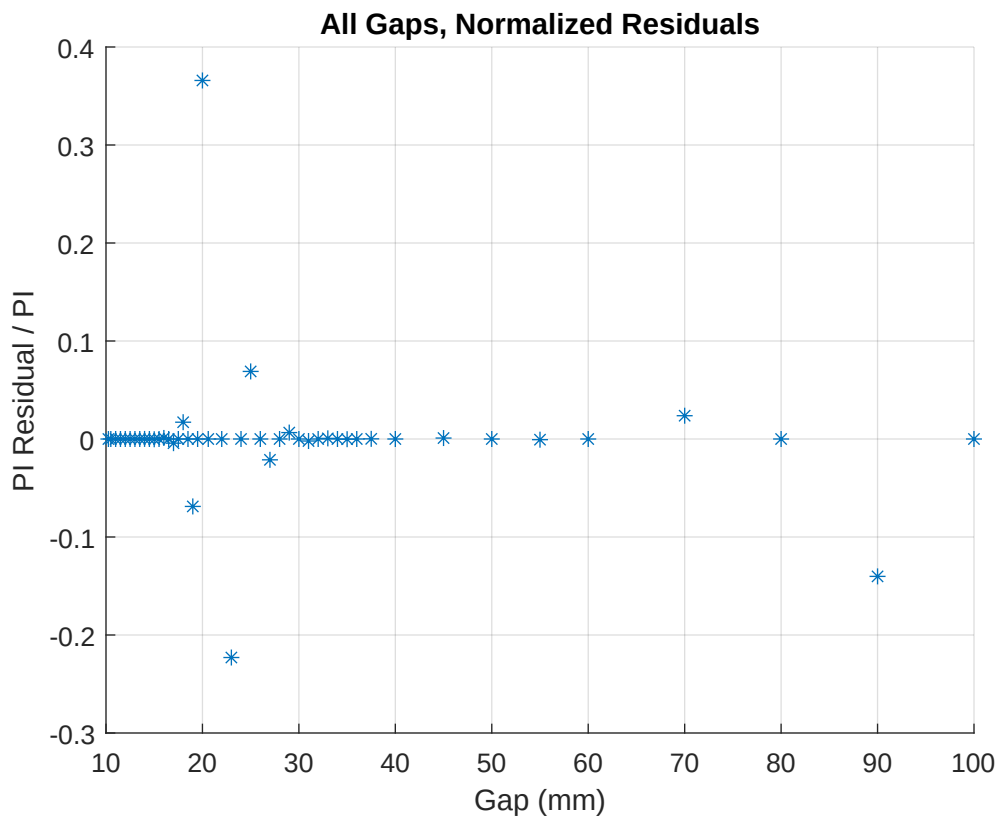
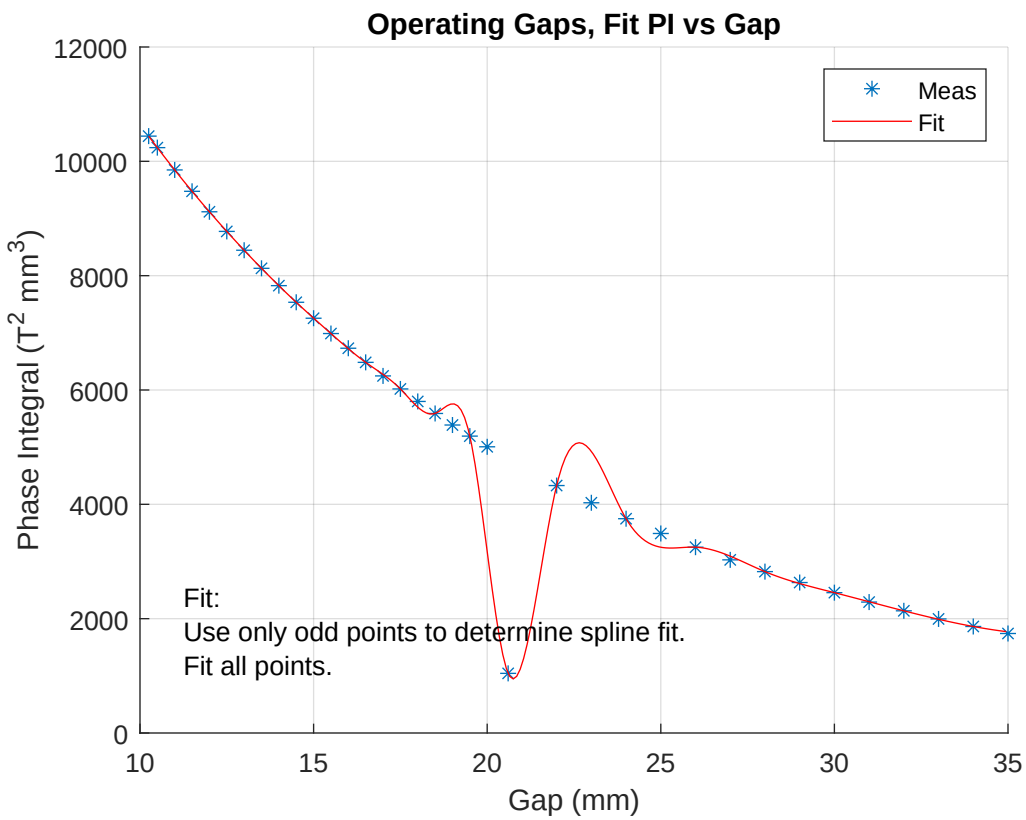
SLAC Magnetic Measurements
Date: 08-04-2026
Time: 09:24:32

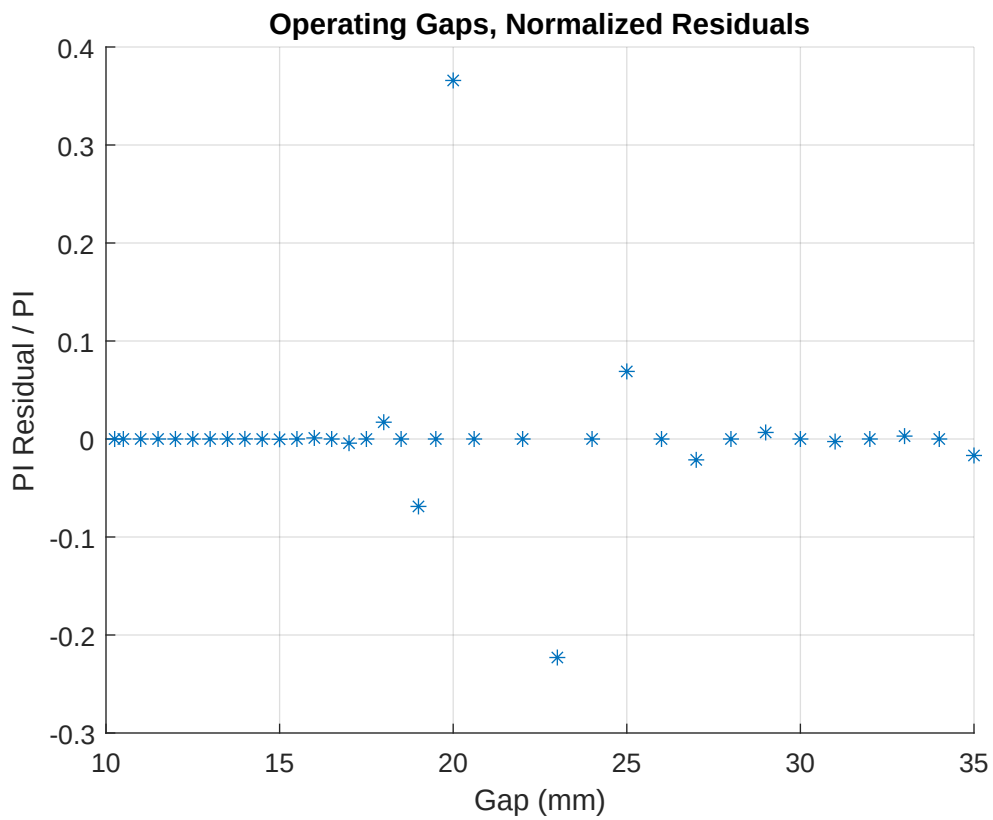

Measured Temperature vs Gap
Temperature (C)
20.428
20.426
20.424
20.422
20.42
20.418
20.416
20.414
20.412
20.41
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
Gap (m)

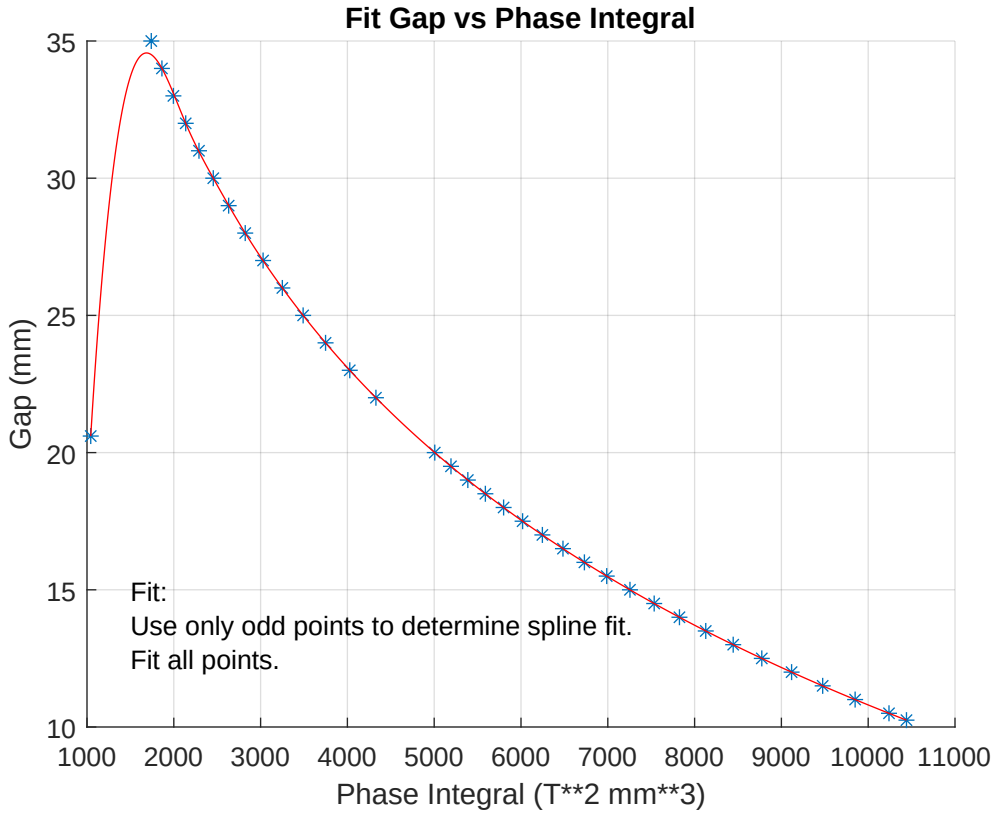

Gap vs Encoder Reading
Fit:
Gap = p1 * enc + p2
p1 = 5.0000e-05 (mm / count)
p2 = -9.8900e+00 (mm)
Gap = p1 * (enc + p3)
p1 = 5.0000e-05 (mm / count)
p3 = -197800
Data
Fit
Gap (mm)
Encoder
×10^6
100
90
80
70
60
50
40
30
20
10
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2

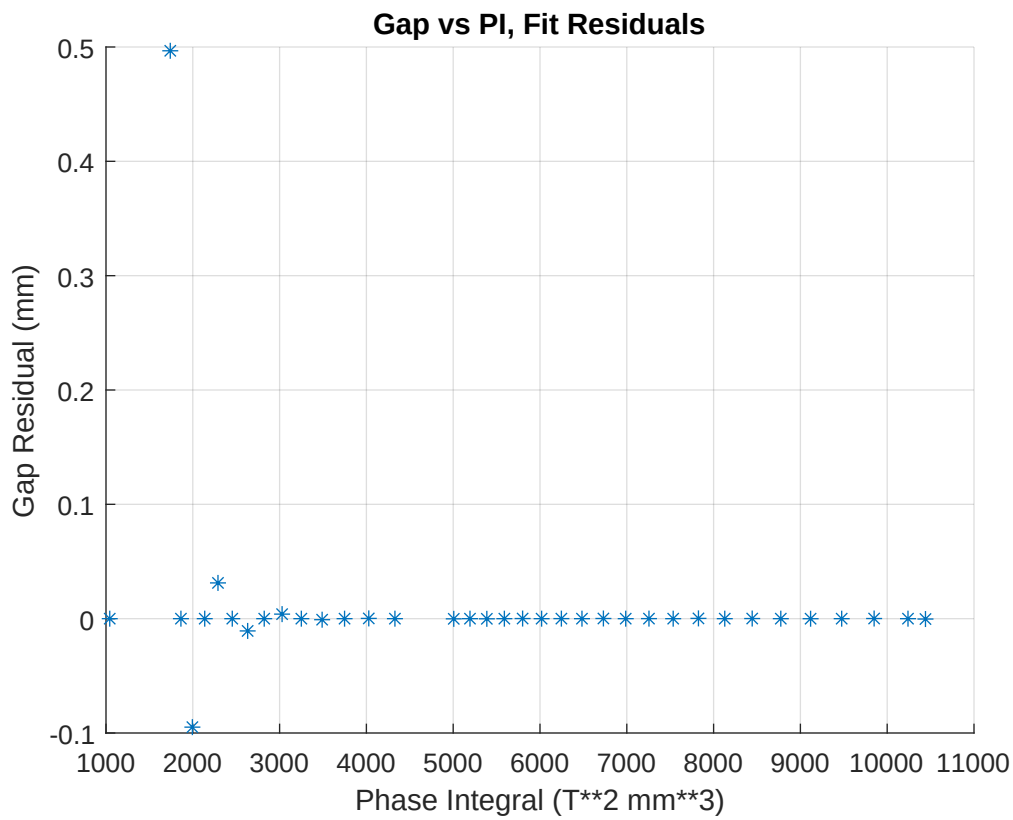

All Gaps, Fit PI vs Gap
Meas
Fit
Phase Integral (T^2 mm^3)
Gap (mm)
Fit:
Use only odd points to determine spline fit.
Fit all points.
12000
10000
8000
6000
4000
2000
0
10
20
30
40
50
60
70
80
90
100

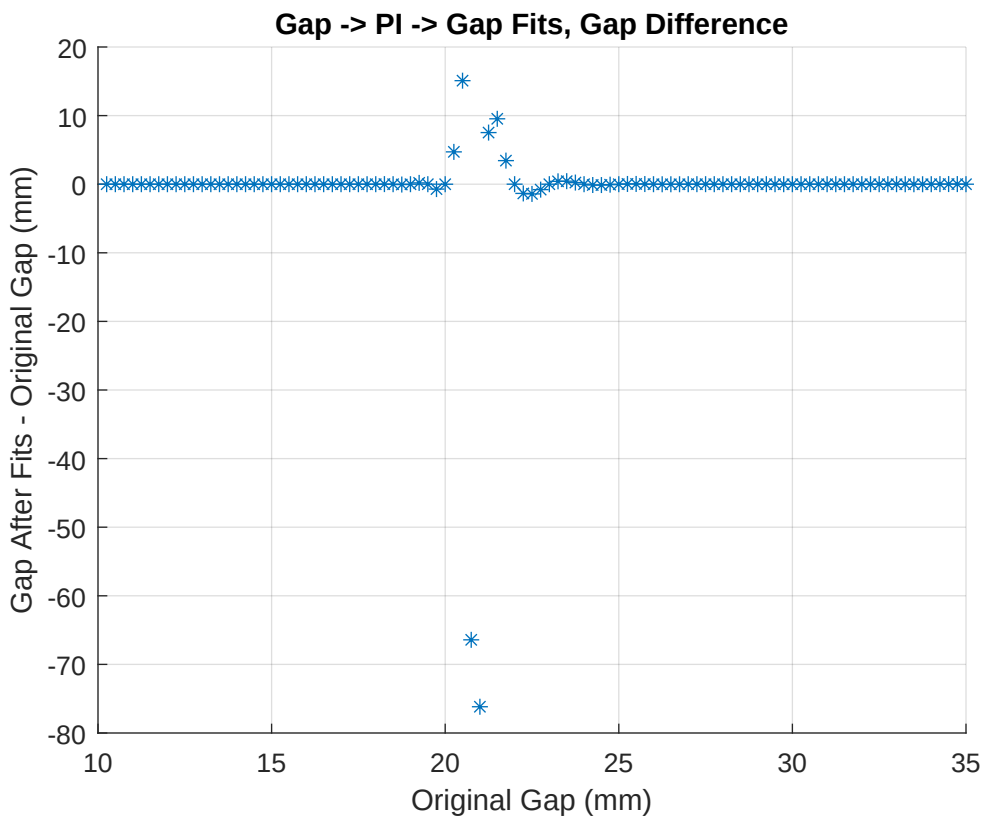

All Gaps, Normalized Residuals
PI Residual / PI
Gap (mm)
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
10
20
30
40
50
60
70
80
90
100

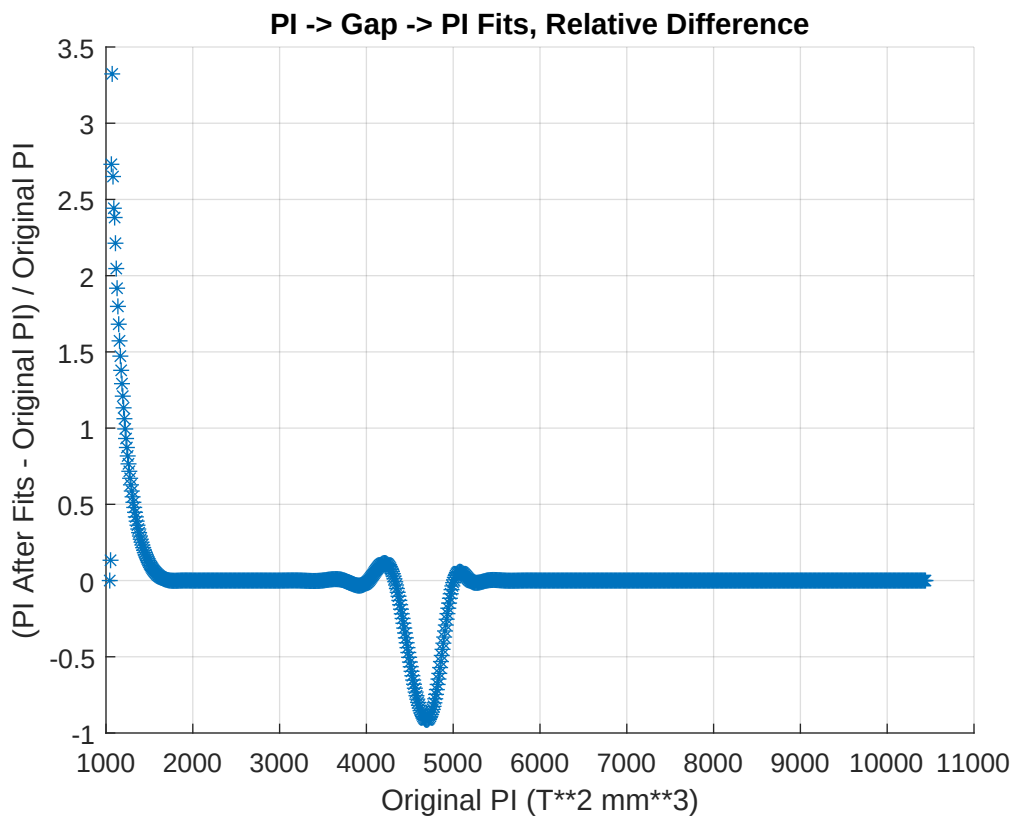

Operating Gaps, Fit PI vs Gap
Meas
Fit
Phase Integral (T^2 mm^3)
Gap (mm)
Fit:
Use only odd points to determine spline fit.
Fit all points.
12000
10000
8000
6000
4000
2000
0
10
15
20
25
30
35

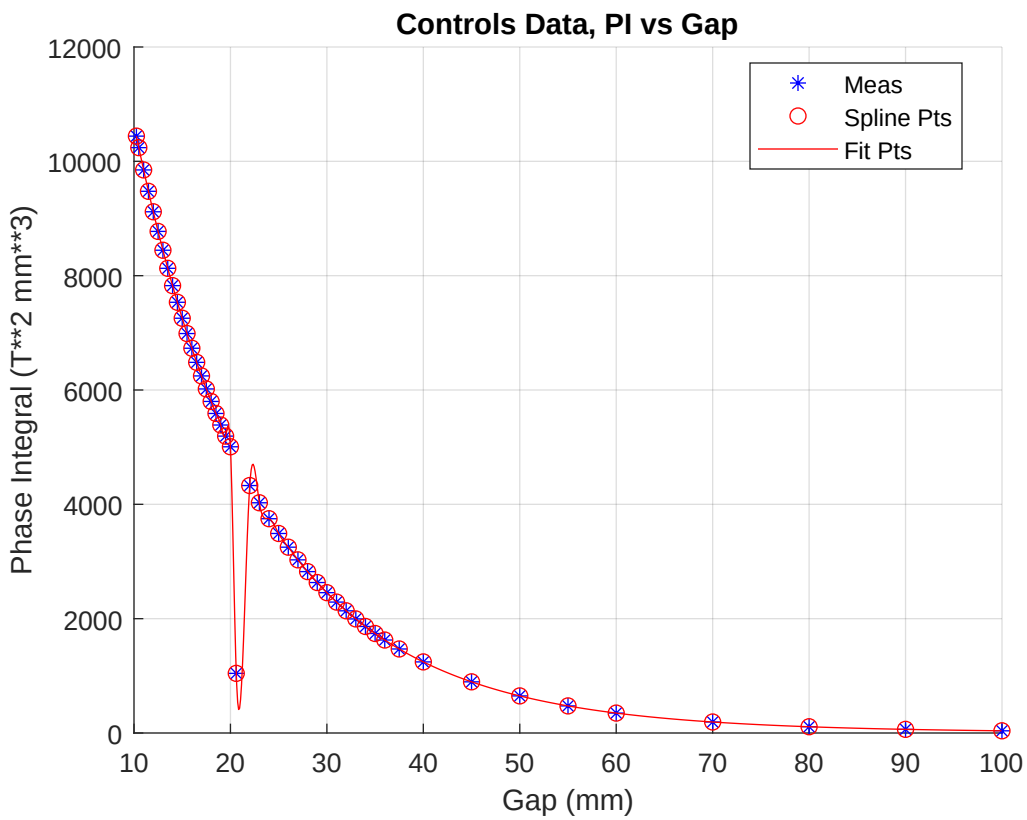

Operating Gaps, Normalized Residuals
PI Residual / PI
Gap (mm)
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
10
15
20
25
30
35

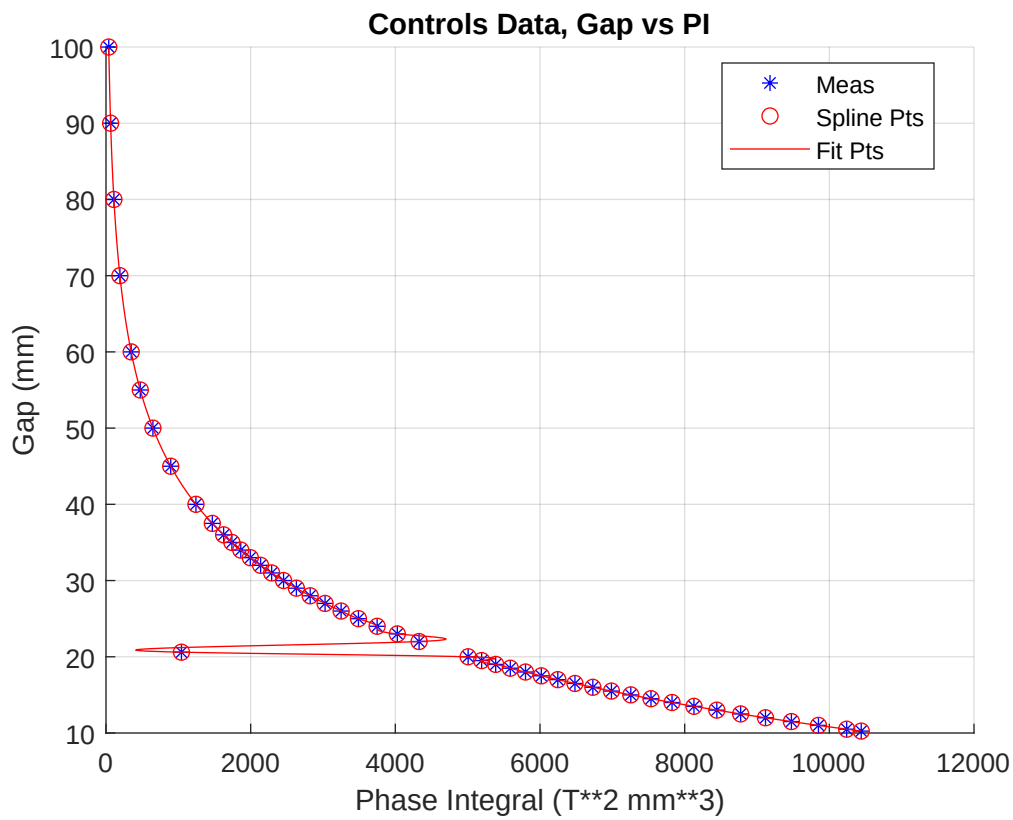

Fit Gap vs Phase Integral
Gap (mm)
35
30
25
20
15
10
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
Phase Integral (T**2 mm**3)
Fit:
Use only odd points to determine spline fit.
Fit all points.


Gap vs PI, Fit Residuals
Gap Residual (mm)
0.5
0.4
0.3
0.2
0.1
0
-0.1
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
Phase Integral (T**2 mm**3)


Gap -> PI -> Gap Fits, Gap Difference
Gap After Fits - Original Gap (mm)
Original Gap (mm)
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
10
15
20
25
30
35


PI -> Gap -> PI Fits, Relative Difference
(PI After Fits - Original PI) / Original PI
Original PI (T**2 mm**3)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
-1
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000


Controls Data, PI vs Gap
Meas
Spline Pts
Fit Pts
Phase Integral (T**2 mm**3)
Gap (mm)
12000
10000
8000
6000
4000
2000
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
2000
4000
6000
8000
10000
12000