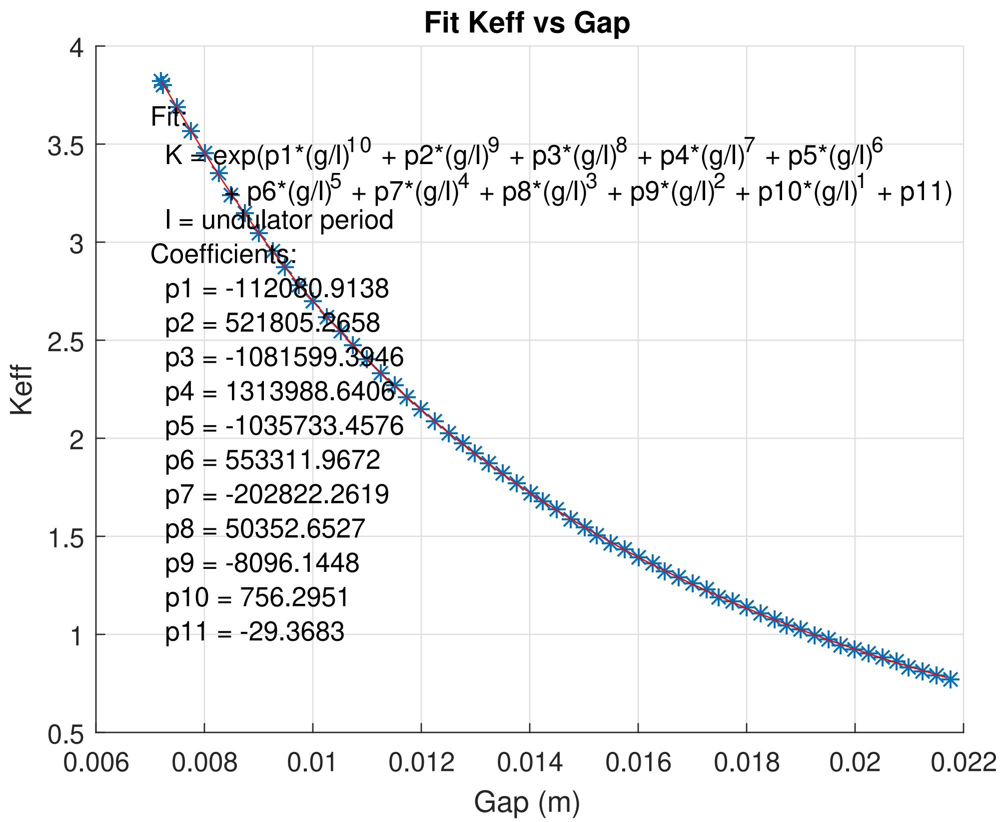
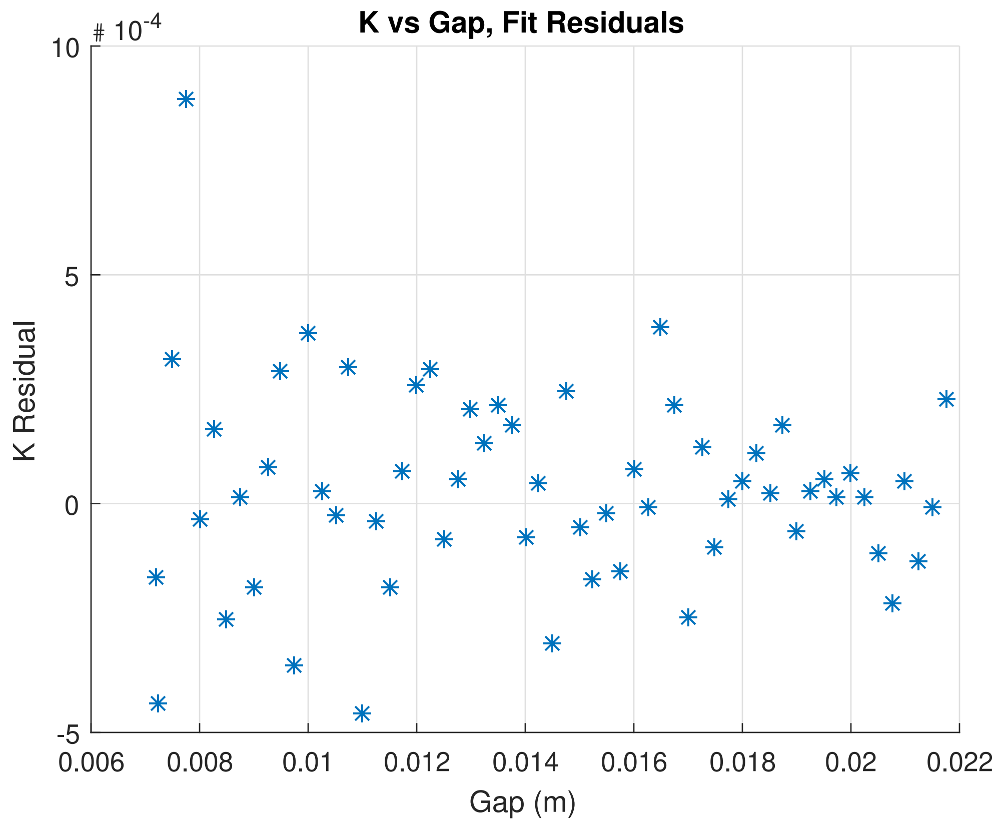
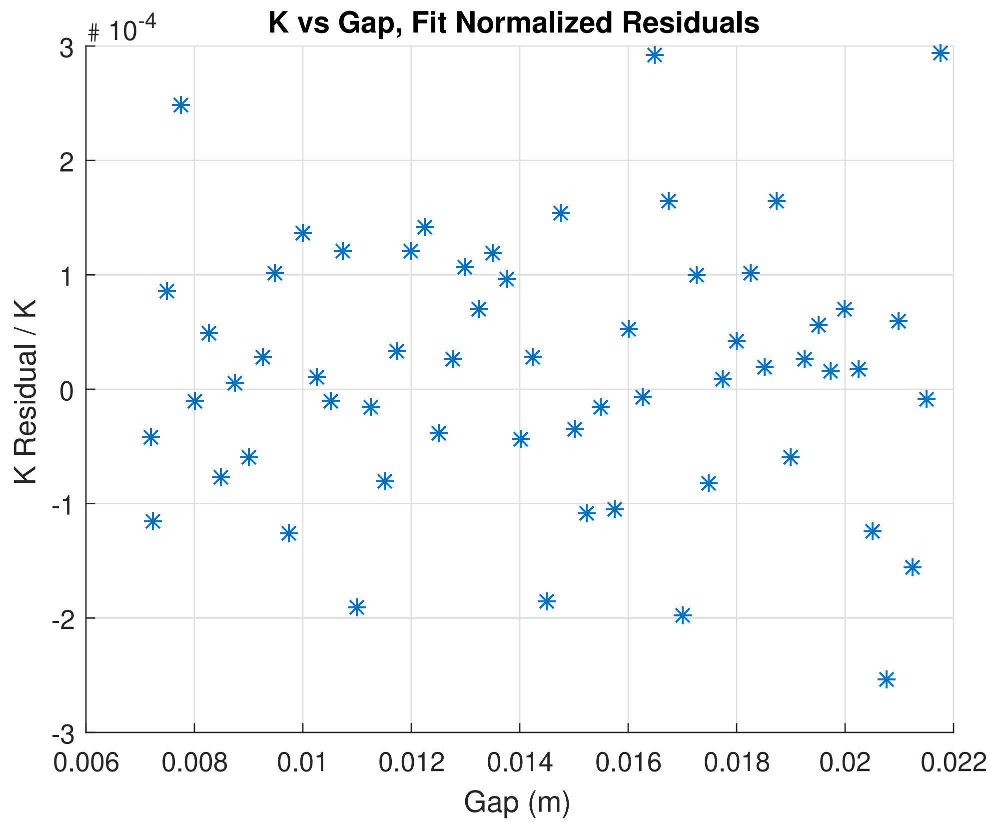
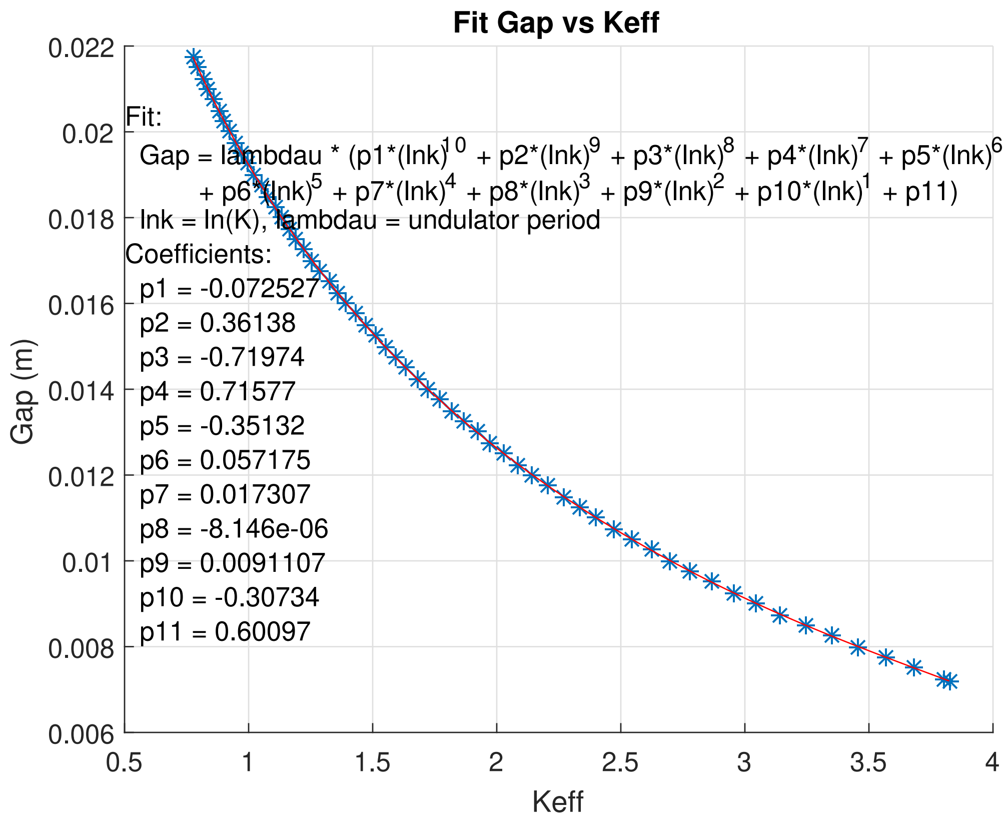
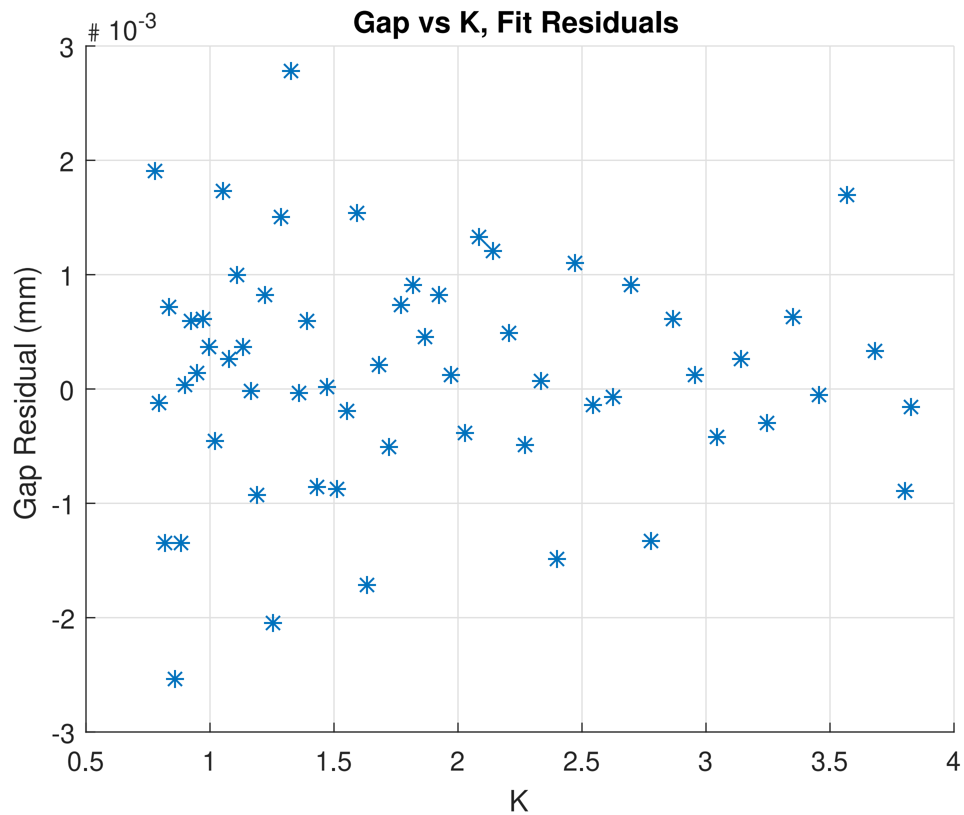
SLAC Magnetic Measurements#
Date: 08-26-2016#
Time: 12:06:18#


Fit Keff vs Gap
Fit:
K = exp(p1*(g/l)^10 + p2*(g/l)^9 + p3*(g/l)^8 + p4*(g/l)^7 + p5*(g/l)^6
+ p6*(g/l)^5 + p7*(g/l)^4 + p8*(g/l)^3 + p9*(g/l)^2 + p10*(g/l)^1 + p11)
l = undulator period
Coefficients:
p1 = -112080.9138
p2 = 521805.2658
p3 = -1081599.3946
p4 = 1313988.6406
p5 = -1035733.4576
p6 = 553311.9672
p7 = -202822.2619
p8 = 50352.6527
p9 = -8096.1448
p10 = 756.2951
p11 = -29.3683
Keff
Gap (m)
4
3.5
3
2.5
2
1.5
1
0.5
0.006
0.008
0.01
0.012
0.014
0.016
0.018
0.02
0.022

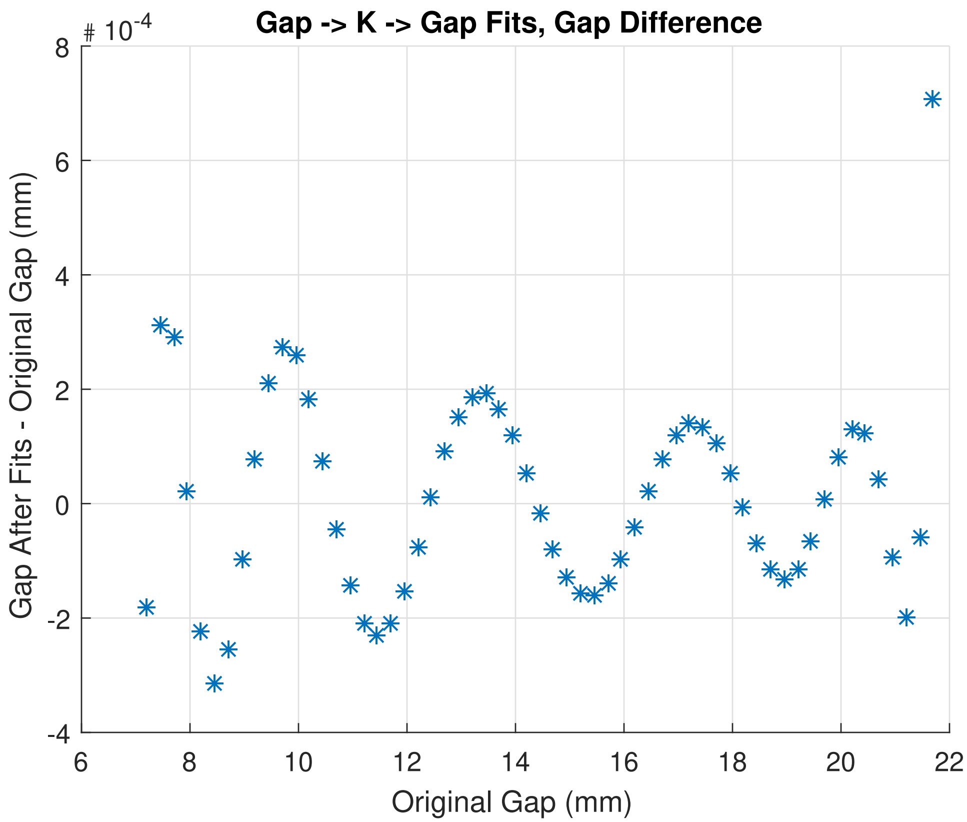

K vs Gap, Fit Residuals
10^-4
10
5
0
-5
K Residual
0.006
0.008
0.01
0.012
0.014
0.016
0.018
0.02
0.022
Gap (m)

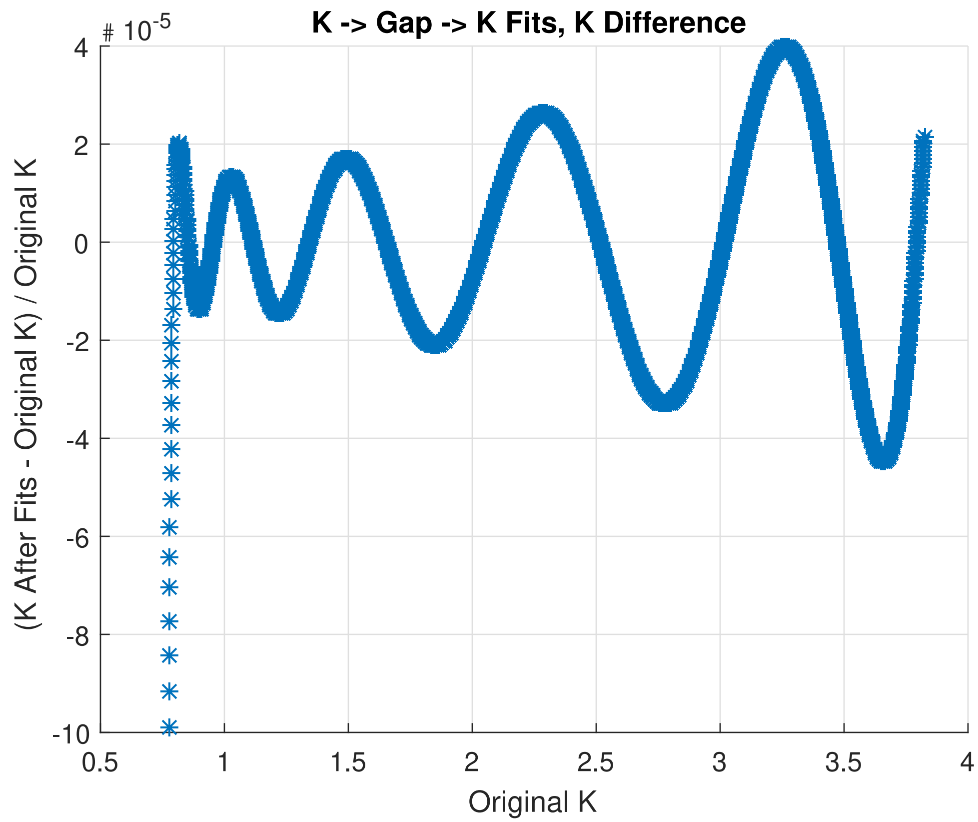

K vs Gap, Fit Normalized Residuals
10-4
3
2
1
0
-1
-2
-3
K Residual / K
0.006
0.008
0.01
0.012
0.014
0.016
0.018
0.02
0.022
Gap (m)


Fit Gap vs Keff
Fit:
Gap = lambdau * (p1*(lnk)^10 + p2*(lnk)^9 + p3*(lnk)^8 + p4*(lnk)^7 + p5*(lnk)^6
+ p6*(lnk)^5 + p7*(lnk)^4 + p8*(lnk)^3 + p9*(lnk)^2 + p10*(lnk)^1 + p11)
lnk = ln(K), lambdau = undulator period
Coefficients:
p1 = -0.072527
p2 = 0.36138
p3 = -0.71974
p4 = 0.71577
p5 = -0.35132
p6 = 0.057175
p7 = 0.017307
p8 = -8.146e-06
p9 = 0.0091107
p10 = -0.30734
p11 = 0.60097
Gap (m)
Keff
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.5
1
1.5
2
2.5
3
3.5
4



Gap vs K, Fit Residuals
10-3
3
2
1
0
-1
-2
-3
Gap Residual (mm)
0.5
1
1.5
2
2.5
3
3.5
4
K


Gap -> K -> Gap Fits, Gap Difference
10^-4
8
6
4
2
0
-2
-4
Gap After Fits - Original Gap (mm)
6
8
10
12
14
16
18
20
22
Original Gap (mm)



K -> Gap -> K Fits, K Difference
10-5
4
2
0
-2
-4
-6
-8
-10
0.5
1
1.5
2
2.5
3
3.5
4
Original K
(K After Fits - Original K) / Original K