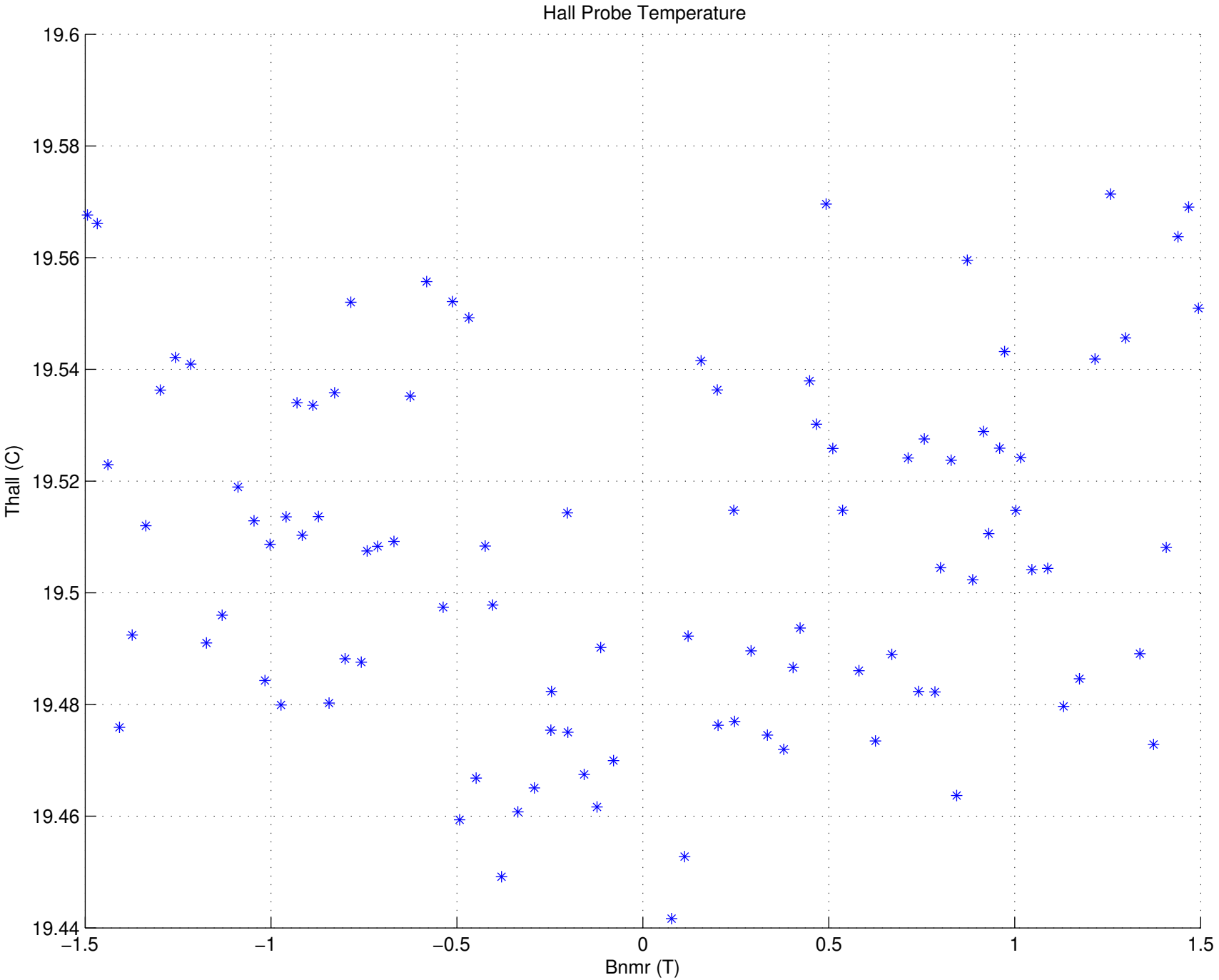
SLAC Magnetic Measurements
Hall Probe Calibration

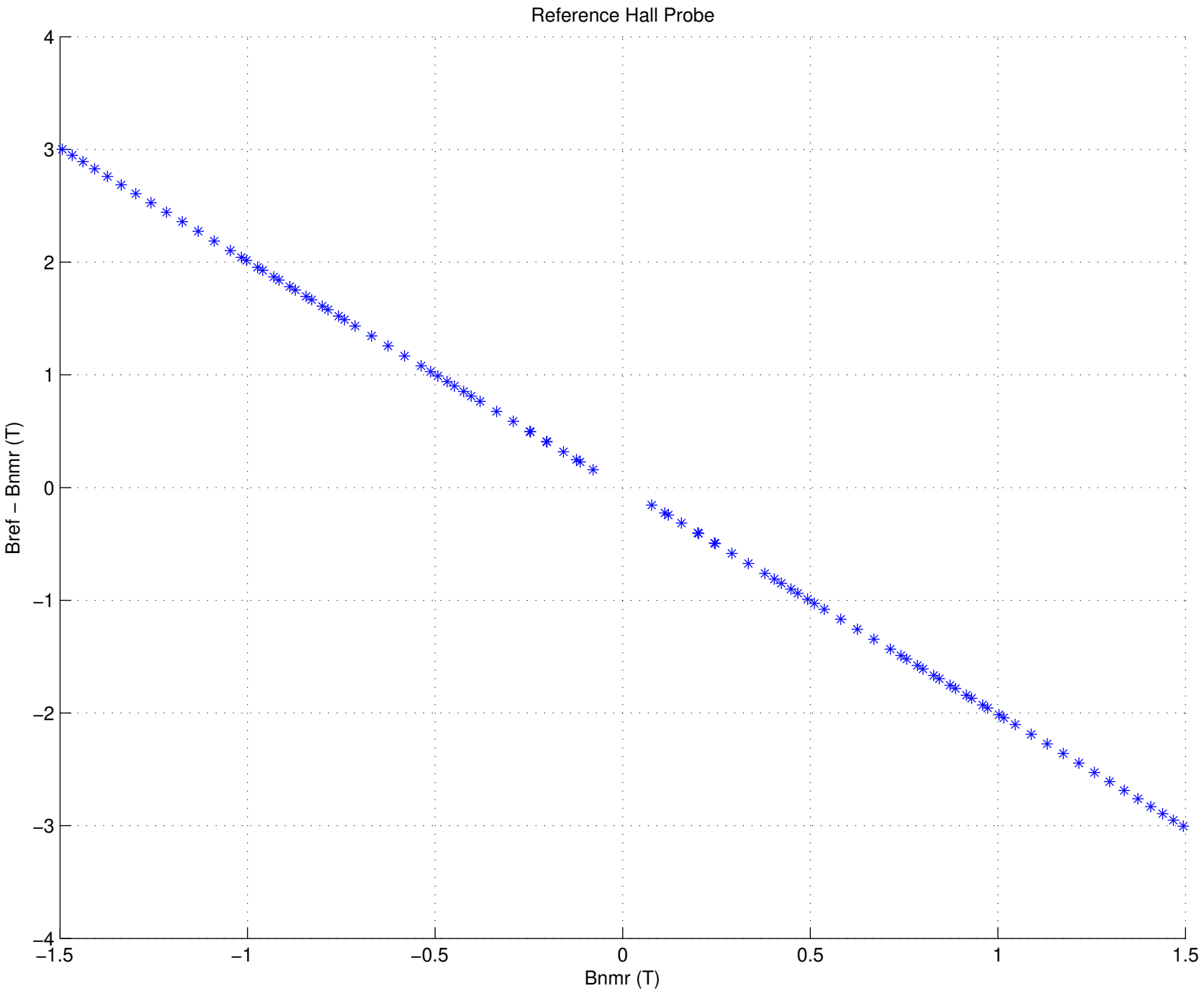
Header:
SLAC Magnetic Measurements
Date: 07−16−2009
Time: 09:39:21

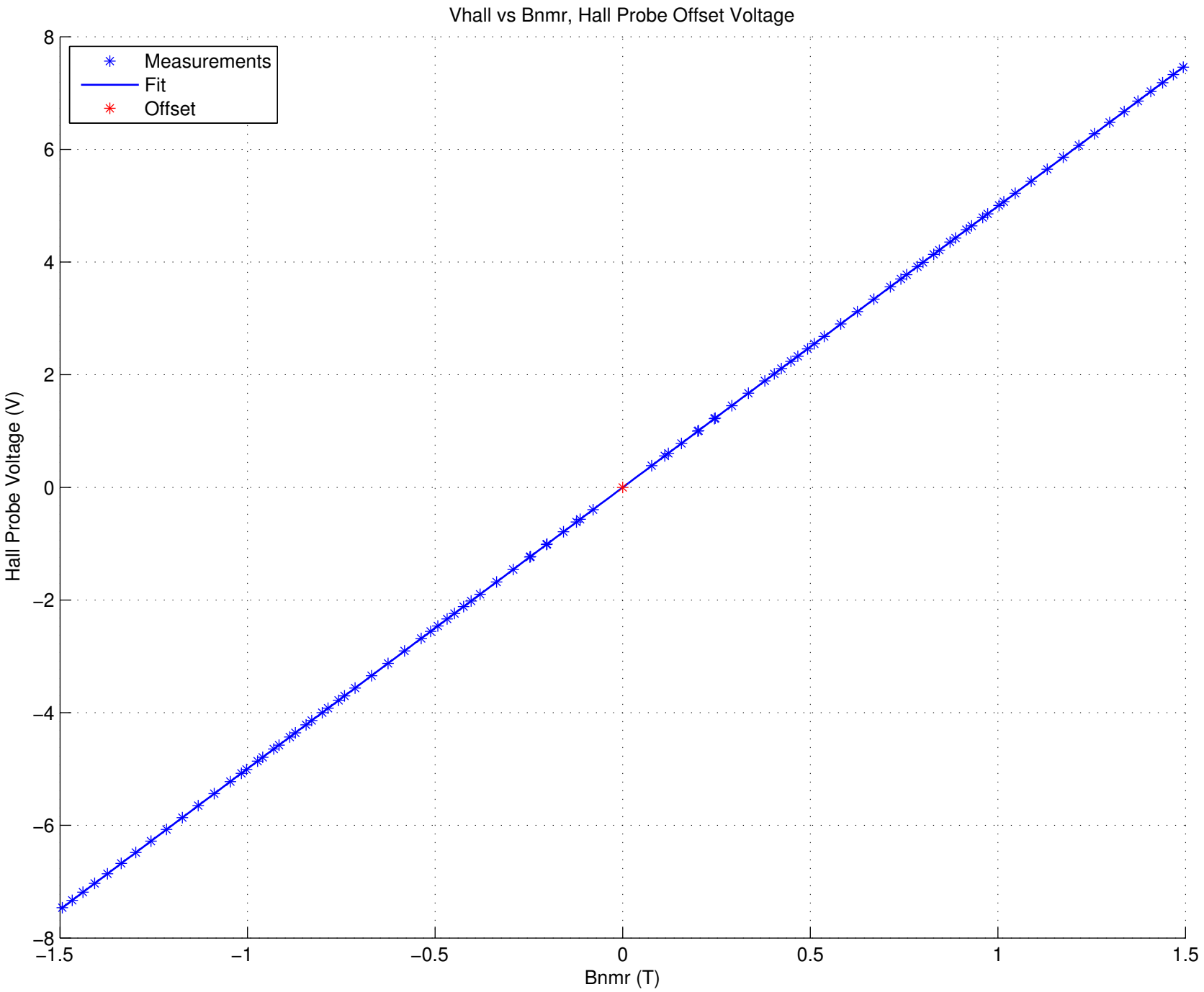
Project: LCLS
Device Type: Hall probe
Data Type: y
Serial Number: SENTRON−441
Run Number: 40
Measurement Type: HPCS
Operator: YL
Comment: Kugler probe re−calibration; temperature test, 19.5 C

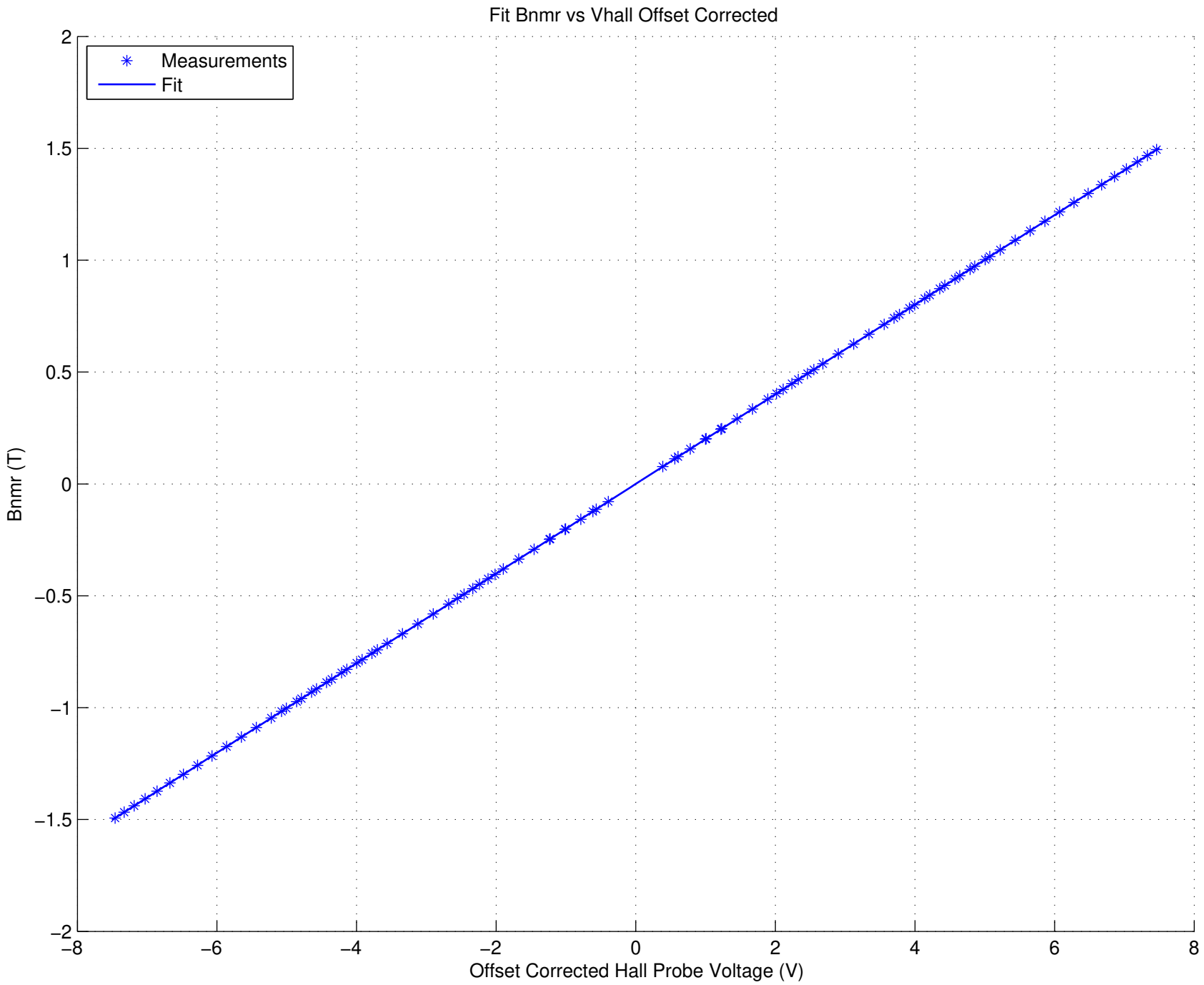
Current(A) T(C) Est. Field(T) Voltage Field

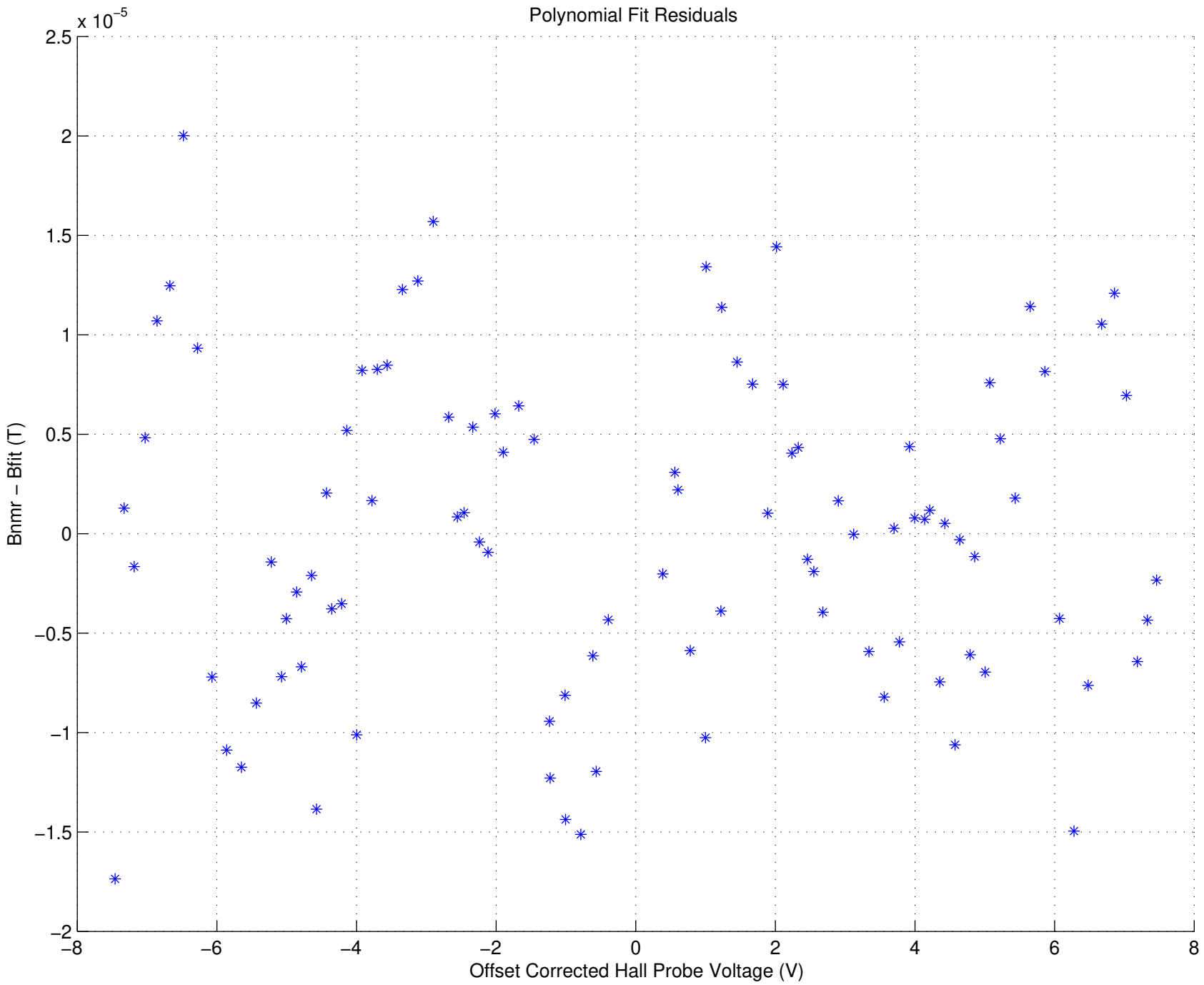
Parameters:
INPUT−FILE−DIR =V:\MET\MagServe\MagData\LCLS\Hall probe\Sentron−441\HPCS−040\
INPUT−FILE−NAME =hpcs−dat.001
POLY−FIT−ORDER =7
NUM−SIG−OUTLIER =2
NOM−CALIB−CONST =0.2
MAX−B−NMR−FIT =1.5

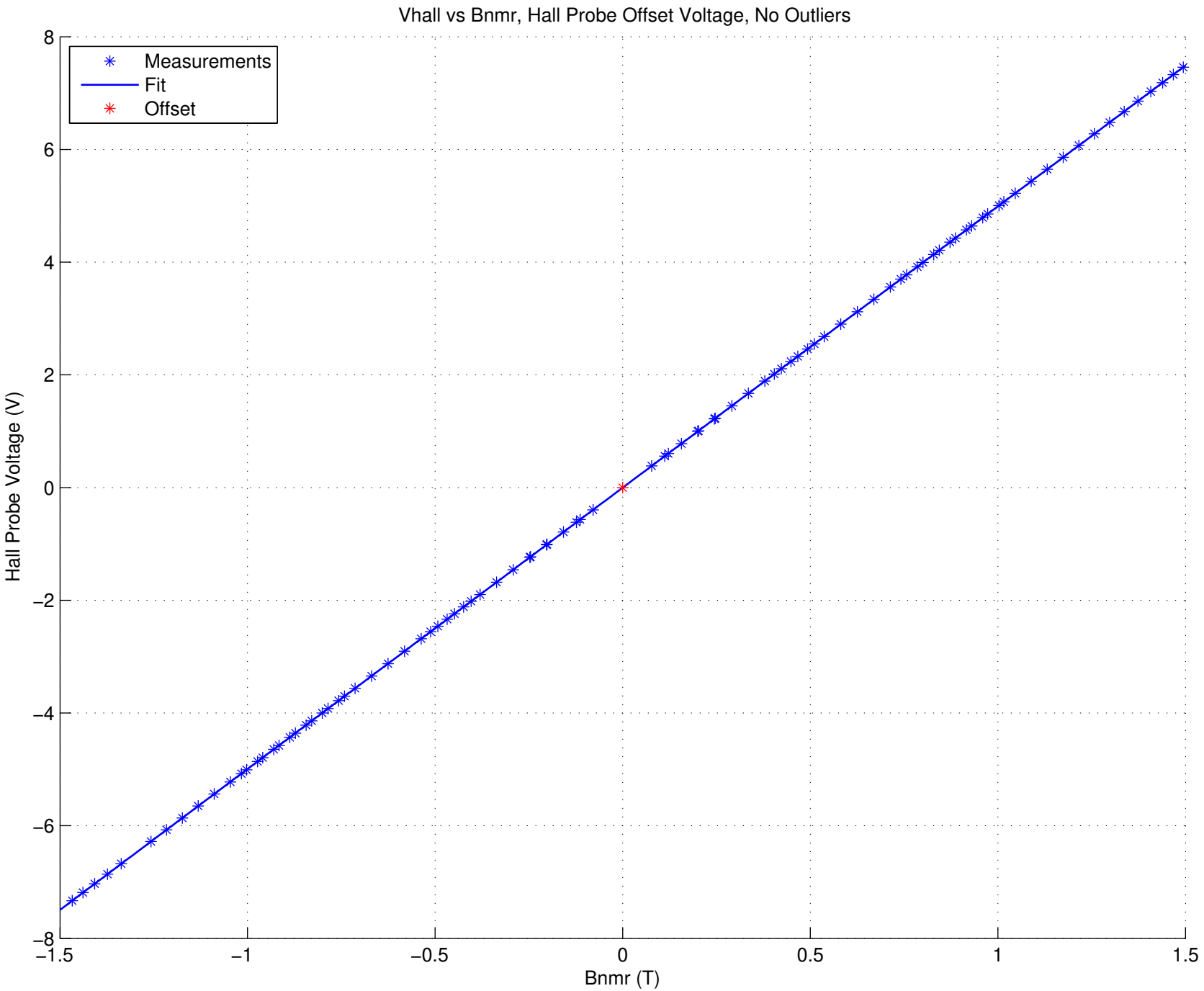

Hall Probe Temperature
19.6
19.58
19.56
19.54
19.52
19.5
19.48
19.46
19.44
Thall (C)
−1.5
−1
−0.5
0
0.5
1
1.5
Bnmr (T)

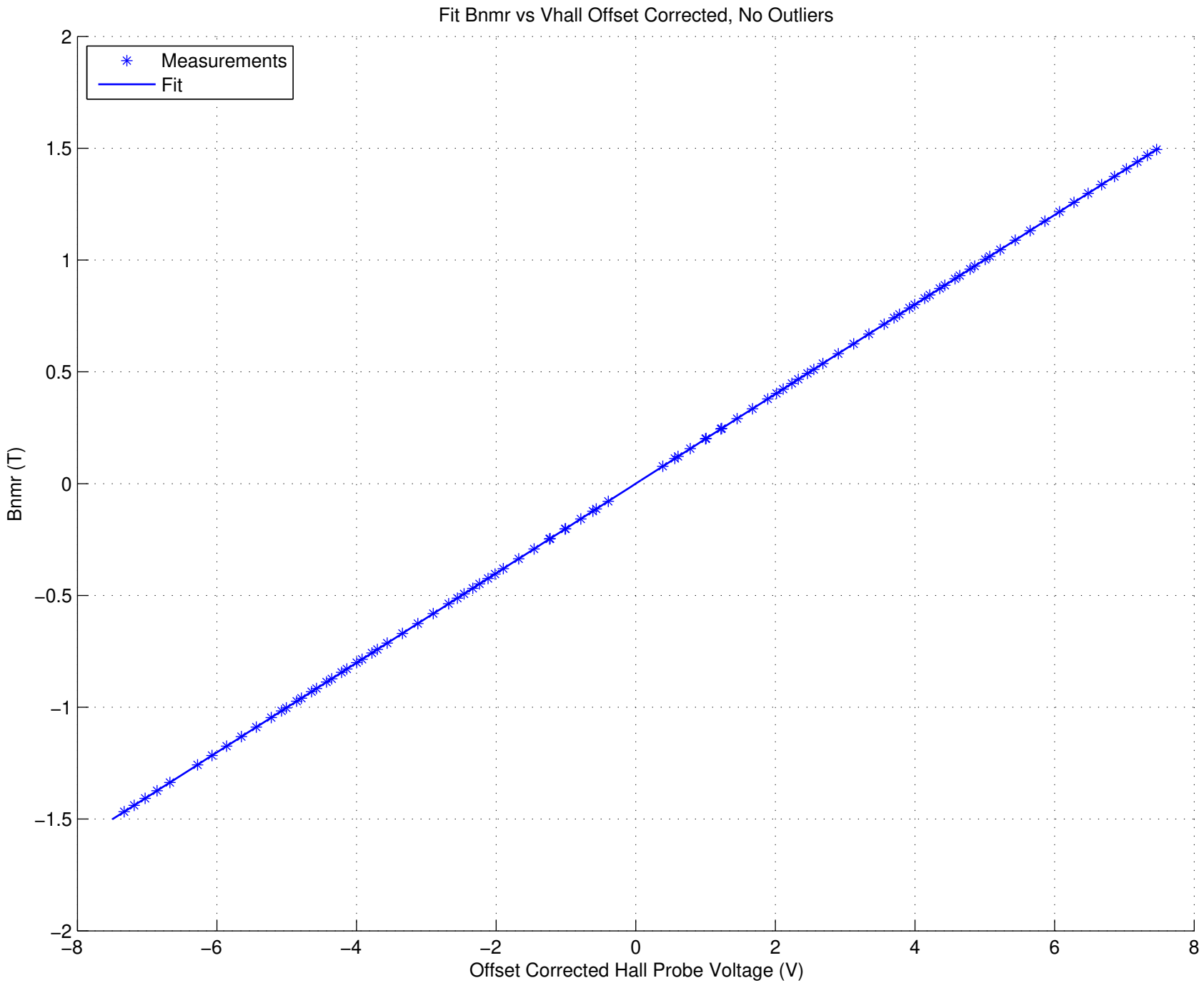

Reference Hall Probe
Bref – Bnmr (T)
Bnmr (T)
4
3
2
1
0
−1
−2
−3
−4
−1.5
−1
−0.5
0
0.5
1
1.5

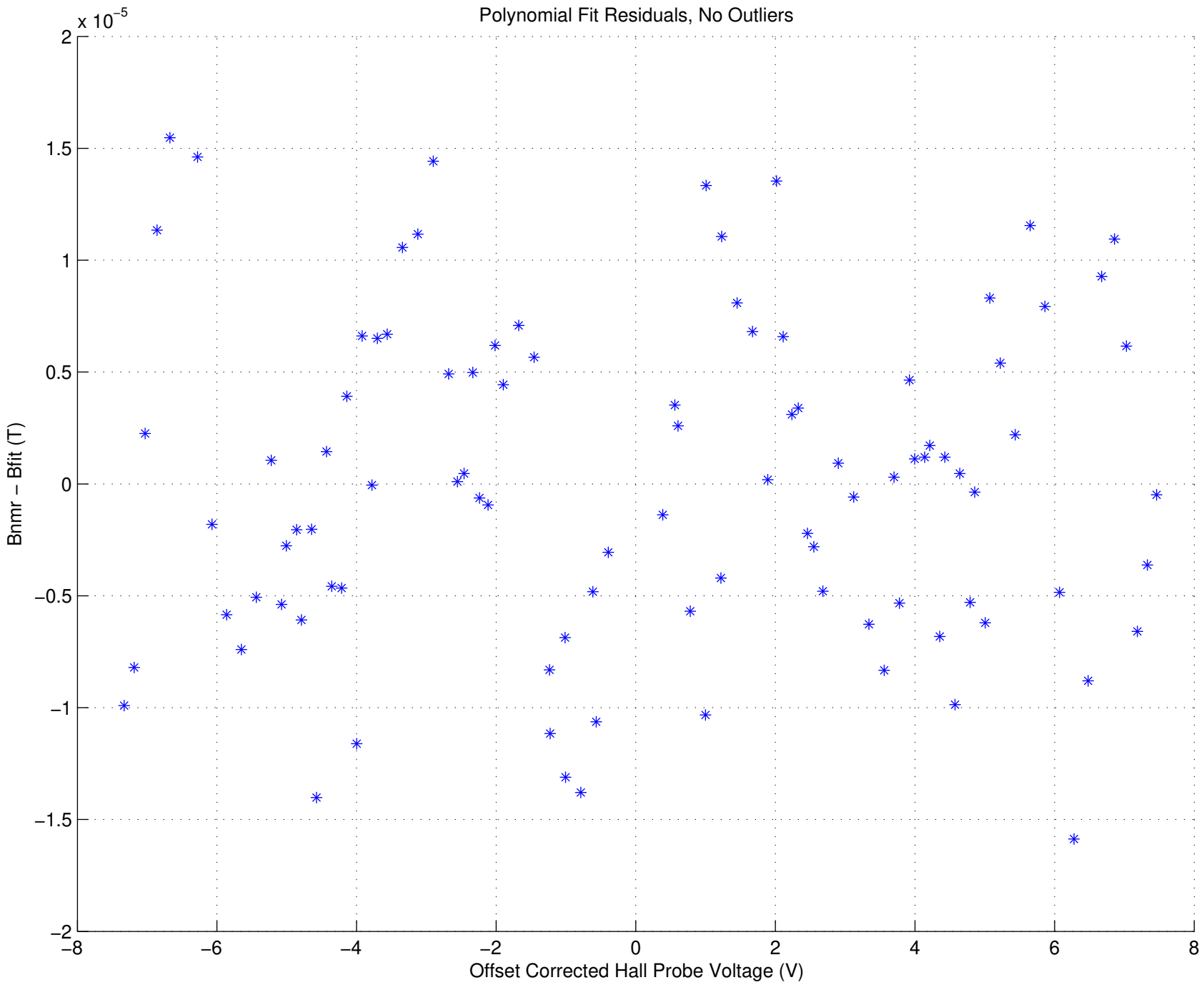

Vhall vs Bnmr, Hall Probe Offset Voltage
Measurements
Fit
Offset
Hall Probe Voltage (V)
Bnmr (T)
8
6
4
2
0
−2
−4
−6
−8
−1.5
−1
−0.5
0
0.5
1
1.5

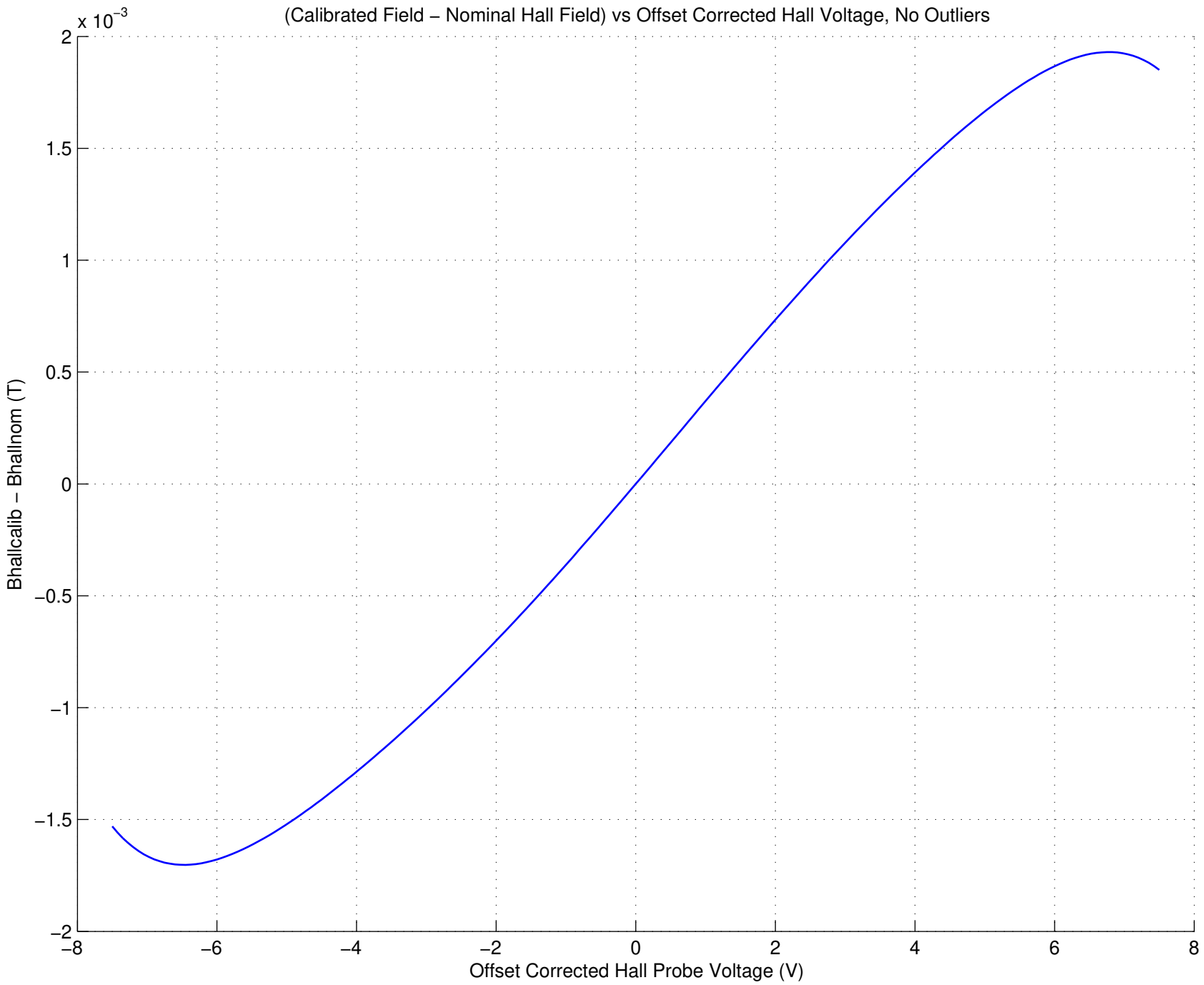

Fit Bnmr vs Vhall Offset Corrected
Measurements
Fit
Bnmr (T)
Offset Corrected Hall Probe Voltage (V)
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−8
−6
−4
−2
0
2
4
6
8


Polynomial Fit Residuals
x 10^-5
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
Bnmr − Bfit (T)
−8
−6
−4
−2
0
2
4
6
8
Offset Corrected Hall Probe Voltage (V)


Vhall vs Bnmr, Hall Probe Offset Voltage, No Outliers
Measurements
Fit
Offset
Hall Probe Voltage (V)
Bnmr (T)
8
6
4
2
0
−2
−4
−6
−8
−1.5
−1
−0.5
0
0.5
1
1.5


Fit Bnmr vs Vhall Offset Corrected, No Outliers
Measurements
Fit
Bnmr (T)
Offset Corrected Hall Probe Voltage (V)
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−8
−6
−4
−2
0
2
4
6
8


Polynomial Fit Residuals, No Outliers
x 10^-5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
Bnmr − Bfit (T)
−8
−6
−4
−2
0
2
4
6
8
Offset Corrected Hall Probe Voltage (V)


(Calibrated Field – Nominal Hall Field) vs Offset Corrected Hall Voltage, No Outliers
x 10^-3
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
Bhallcalib – Bhallnom (T)
−8
−6
−4
−2
0
2
4
6
8
Offset Corrected Hall Probe Voltage (V)