
```

D = dlmread('measurements.dat');
deg=6;
%make sets of plots and fits for polynomial up to degree 6
%for a given model ndf =n - deg+1
for i=0:deg;
    figure;
    h1 = subplot(2,1,1);
    scatter(D(:,1),D(:,2))
    errorbar(D(:,1),D(:,2),D(:,3),'.k');
    hold on
    %get paramaters and estimates from model
    [B,Berr, Yhat] = polyWLS(D(:,1),D(:,2),D(:,3),i);
    %compute chisq and p value
    ChisqVec =( (D(:,2)-Yhat)./(D(:,3)) ).^2 ;
    Chisq = sum(ChisqVec,1);
    ndf = size(D,1)-(i+1);
    pValue = 1- integral(@(p)chisqpdf(p,ndf),0,Chisq);

    plot(D(:,1), Yhat );
    text(min(D(:,1)),max(D(:,2)), ['$\chi^2$ = ',num2str(Chisq)], 'interpreter','latex');
    text(min(D(:,1)),max(D(:,2))-0.05, [ 'pValue = ' , num2str(pValue)], 'interpreter','latex');
    text(max(D(:,1)),min(D(:,2)), [ 'N = ',num2str(size(D,1)) ], 'interpreter','latex' );
    text(max(D(:,1)),min(D(:,2))-0.05, [ '$\nu$ = ' , num2str(size(D,1)-(i+1)) ], 'interpreter','latex');
    title(['Data Fit with Polynomial of Degree ', num2str(i)])
    xlabel('X');
    ylabel('Y');
    h2 = subplot(2,1,2);
    hist(ChisqVec,25);
    ylabel('Events Per Bin');
    xlabel('$\chi^2$ Value','interpreter','latex');
    title('$\chi^2$ histogram','interpreter','latex');

    % report paramters and error matrix, but trim padding
    B = B(1:i+1,:);
    Berr = Berr(1:i+1,:);
end

B =

    1.0012

Berr =

    17.7001

```

$B =$

0.9176
0.1246

$Berr =$

145.7381 -190.8311
-190.8311 284.4193

$B =$

0.9486
-0.0088
0.1141

$Berr =$

1.0e+03 *

0.4521 -1.5079 1.1266
-1.5079 5.9462 -4.8432
1.1266 -4.8432 4.1430

$B =$

0.9565
-0.0784
0.2626
-0.0894

$Berr =$

1.0e+05 *

0.0093 -0.0578 0.1024 -0.0549
-0.0578 0.4385 -0.8568 0.4865
0.1024 -0.8568 1.7655 -1.0376
-0.0549 0.4865 -1.0376 0.6245

$B =$

0.9438
0.1187
-0.5006
0.9816
-0.4963

Berr =

1.0e+06 *

0.0016	-0.0156	0.0481	-0.0586	0.0246
-0.0156	0.1955	-0.6726	0.8724	-0.3817
0.0481	-0.6726	2.4491	-3.2929	1.4777
-0.0586	0.8724	-3.2929	4.5380	-2.0738
0.0246	-0.3817	1.4777	-2.0738	0.9609

B =

0.9582
-0.2358
1.6633
-4.2417
4.9483
-2.0494

Berr =

1.0e+08 *

0.0000	-0.0003	0.0016	-0.0033	0.0030	-0.0011
-0.0003	0.0064	-0.0340	0.0745	-0.0724	0.0258
0.0016	-0.0340	0.1909	-0.4346	0.4334	-0.1576
-0.0033	0.0745	-0.4346	1.0149	-1.0313	0.3804
0.0030	-0.0724	0.4334	-1.0313	1.0630	-0.3965
-0.0011	0.0258	-0.1576	0.3804	-0.3965	0.1493

B =

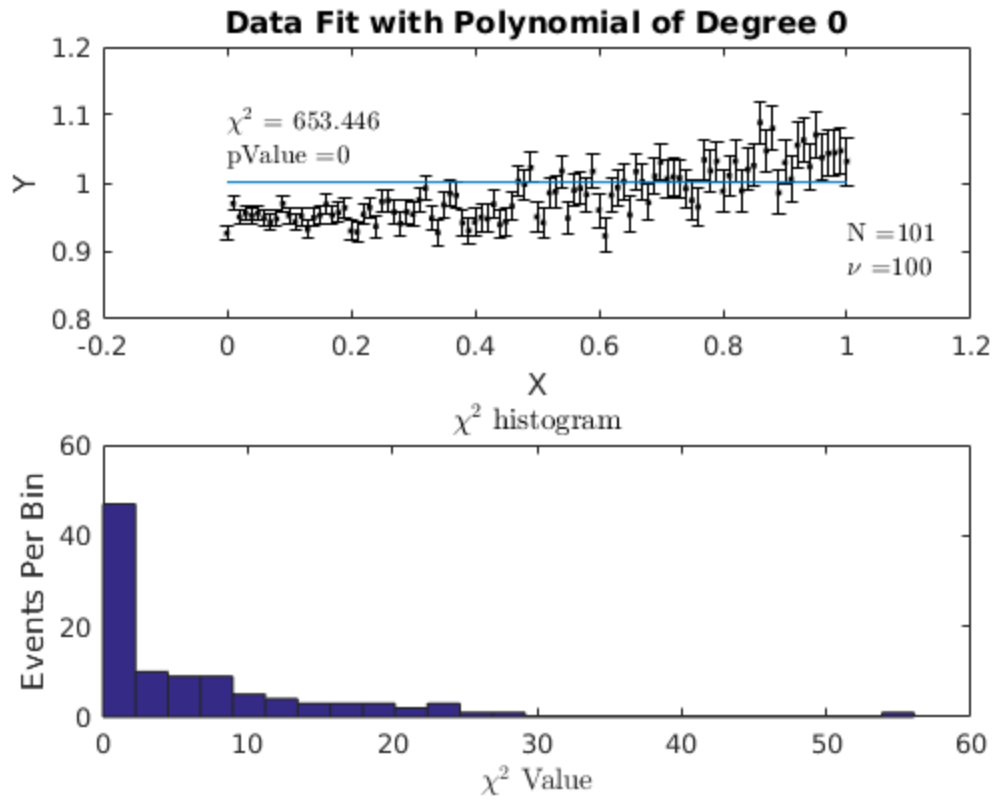
0.9417
0.3631
-3.6436
15.0884
-28.6983
25.8170
-8.8303

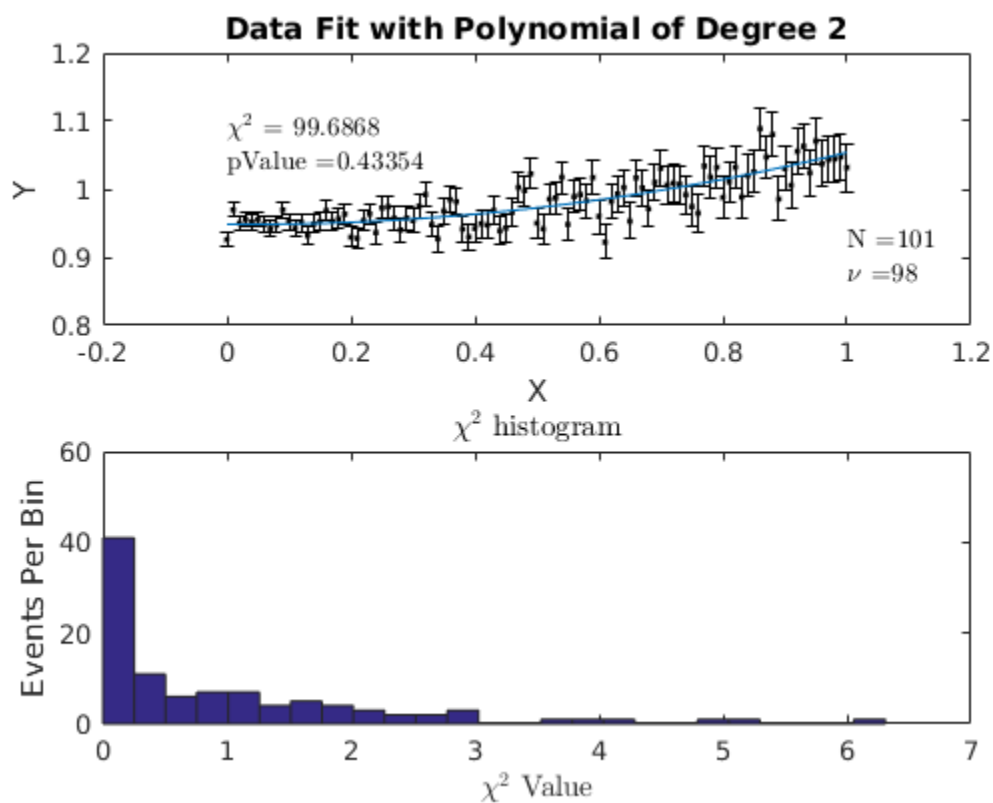
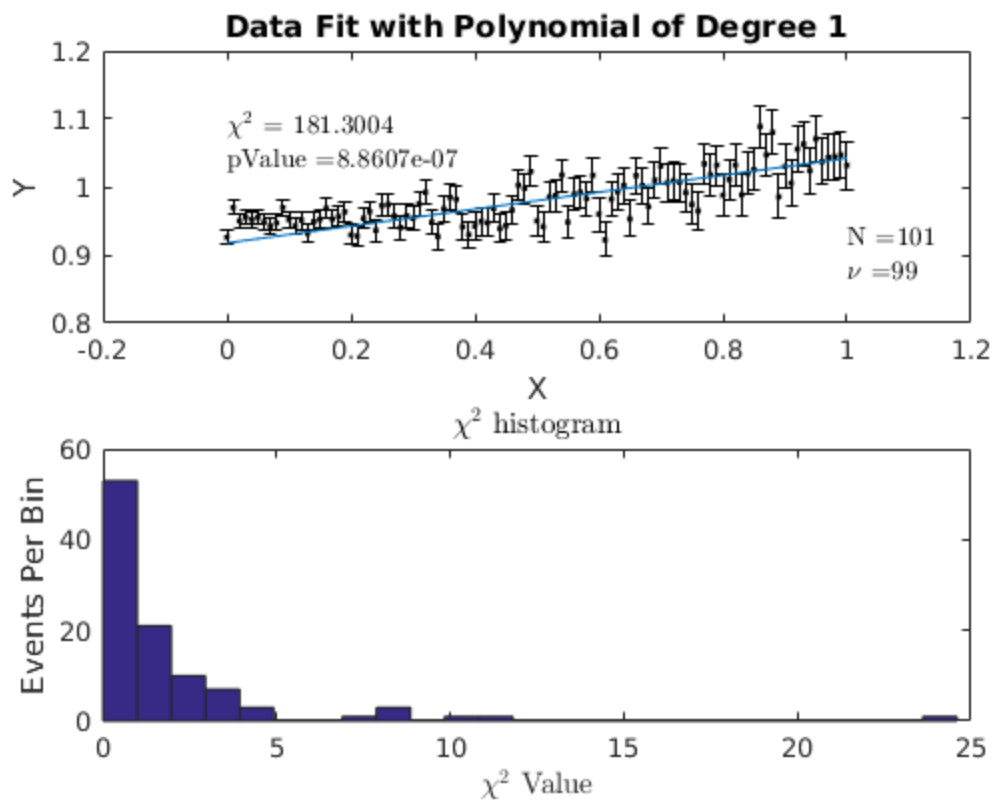
Berr =

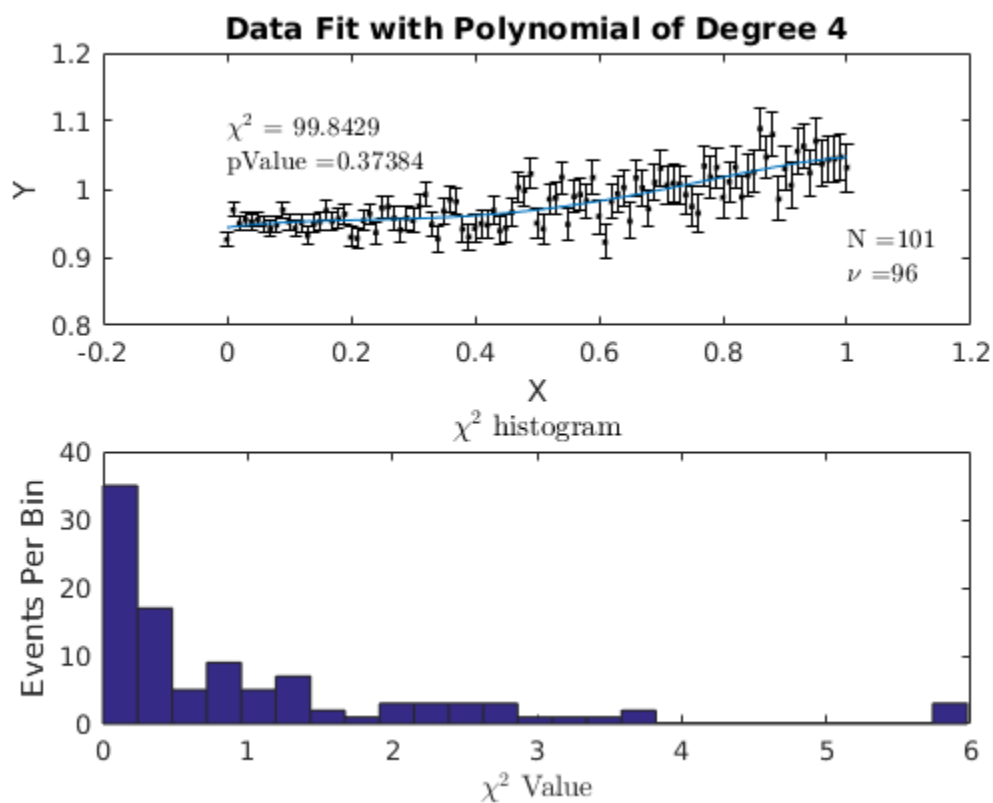
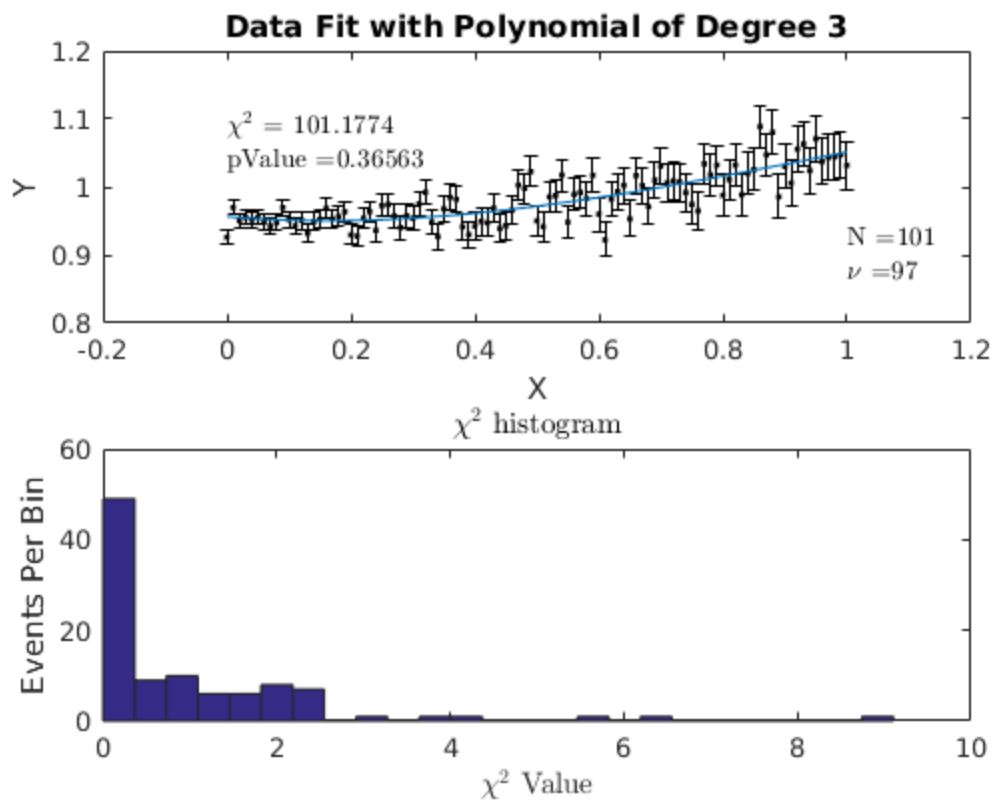
1.0e+09 *

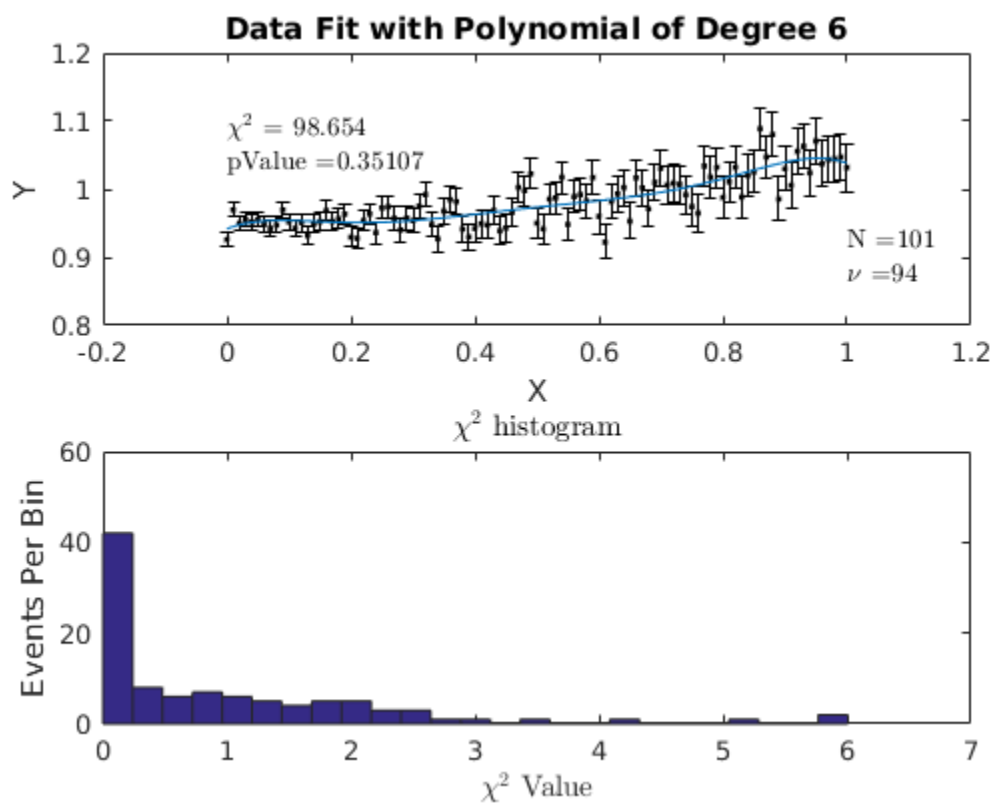
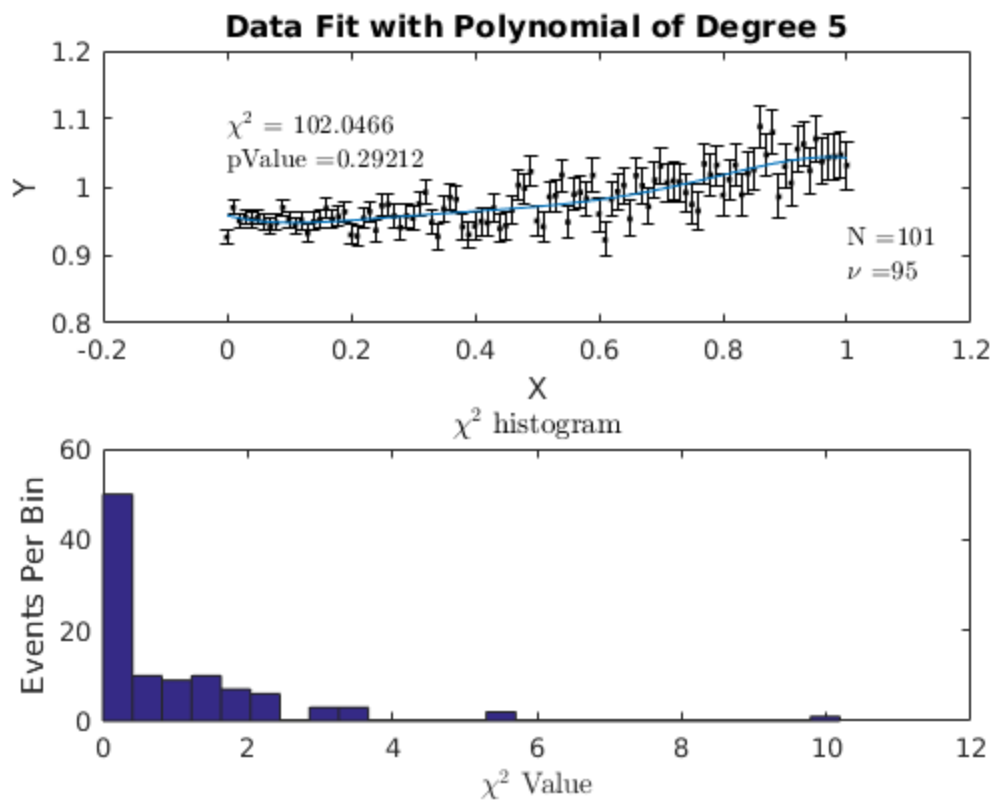
0.0000	-0.0001	0.0004	-0.0013	0.0020	-0.0015	0.0004
-0.0001	0.0017	-0.0129	0.0420	-0.0675	0.0525	-0.0158
0.0004	-0.0129	0.1033	-0.3500	0.5770	-0.4577	0.1400
-0.0013	0.0420	-0.3500	1.2182	-2.0468	1.6478	-0.5101
0.0020	-0.0675	0.5770	-2.0468	3.4896	-2.8417	0.8879

-0.0015	0.0525	-0.4577	1.6478	-2.8417	2.3356	-0.7354
0.0004	-0.0158	0.1400	-0.5101	0.8879	-0.7354	0.2330









Published with MATLAB® R2015b