```
load p0Workspace.mat
```

```
load pdat.mat
```

```
npulses = 0;
nwids = 0
```

```
nwids = 0
```

```
for i=1:length(pulses)
    npulses=npulses+length(pulses(i).pTim);
    nwids = nwids + length(pulses(i).dWid1);
end
```

```
pTims = zeros(npulses,1);
pmAmpMx = zeros(npulses,1);
pmAmpInt = zeros(npulses,1);
pHeight = zeros(npulses, 1);
pWids = zeros(nwids,1);
```

```
a = 1
```

```
a = 1
```

```
for i=1:length(pulses)
    wid = pulses(i).dWid1;
    b = a+length(wid)-1;
    pWids(a:b,:) = wid;
    a = b;
end
```

```
a=1
```

```
a = 1
```

```
for i=1:length(pulses)
   tim = pulses(i).pTim;
   b = a+length(tim)-1;

   ampmx = pulses(i).mAmpMx;
   pTims(a:b,:) = tim;
   pmAmpMx(a:b,:) = ampmx(:,1);
   pmAmpInt(a:b,:) = pulses(i).mAmpInt(:,1);
   a = b;
end
```

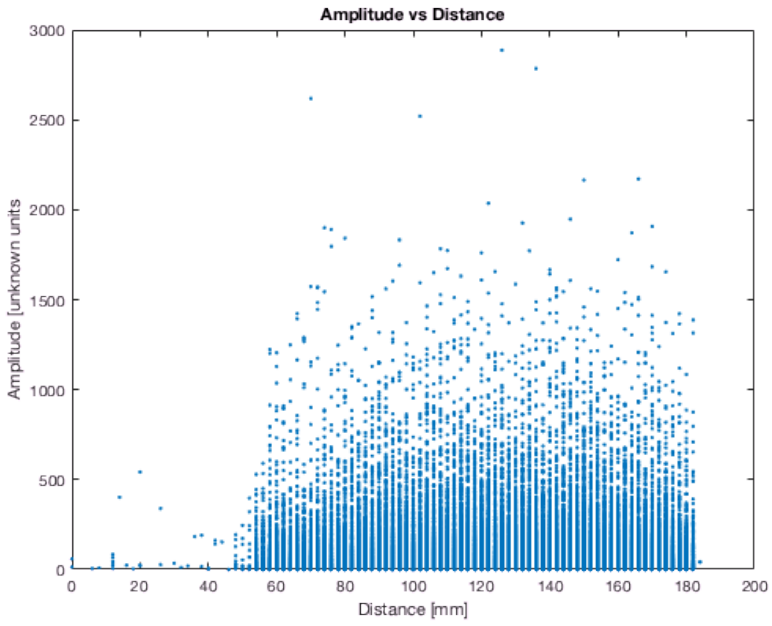
```
xs = pWids(pTims(pTims~=0));
xs = max(xs)-xs;
```

```
ys = pmAmpInt';
ys = ys(pTims~=0)';
```

```
xs
```

```
xs =
    40
    32
    76
    52
    78
    70
    72
    88
    70
    84
     ⋮
     ⋮
```

```
figure
plot(xs, ys*10, '.');
xlabel('Distance [mm]');
ylabel('mAmpInt [unknown units');
title('Amplitude vs Distance')
```




```
histfeatures = [xs ys];
```

```
size(histfeatures)
```

```
ans =
```

```
       74290           2
```

-

```
histogram = hist3(histfeatures, [100, 100])
```

```
histogram =
     1     0     1     0     0     0     0     0     0     0     0     0 ...
     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0
     1     0     0     0     0     0     0     0     0     0     0     0
     1     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0
     2     2     2     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0
     1     0     0     0     0     0     0     0     0     0     0     0
     1     0     0     0     0     0     0     0     0     0     0     0
     :
```

-

```
histimage = fliplr(histogram)';
imagesc(histimage(length(histimage)-20:length(histimage),:));

xticklabels(flip(xs));
yticklabels(ys(1:length(ys)-20))
xtickangle(-40);
xlabel('Distance [mm]')
ylabel('mAmpInt [unknown units]')
title('Distribution of Amplitude vs Distance')
```