Contents


```
% plotMrmRetLog.m
% This script prompts the user for a MRM-RET logfile, reads, parses, and
% produces a "waterfall plot" of the motion filtered scans and detection lists
% in the logfile
clear all; close all; clc %#ok<*CLALL>
```

Query user for logfile

```
%dnm = '.'; fnm = 'MRM_002.csv';
[fnm,dnm] = uigetfile('*.csv');
fprintf('Reading logfile %s\n',fullfile(dnm,fnm));
[cfg,req,scn,det] = readMrmRetLog(fullfile(dnm,fnm));
```

```
Reading logfile C:\Users\austinsbrown\Dropbox\ee384\lab7\RetLog_002.csv
```

Separate raw, bandpassed, and motion filtered data from scn structure

(only motion filtered is used)

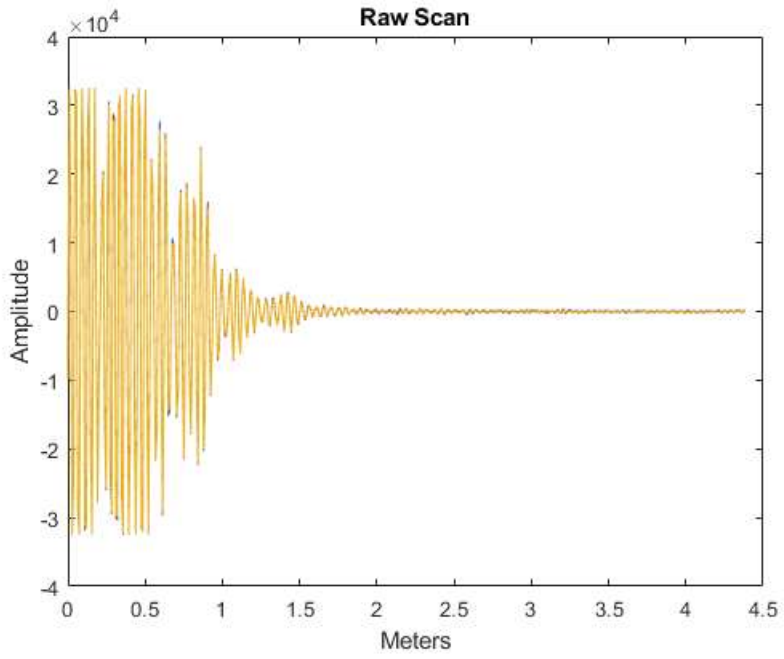
Pull out the raw scans (if saved)

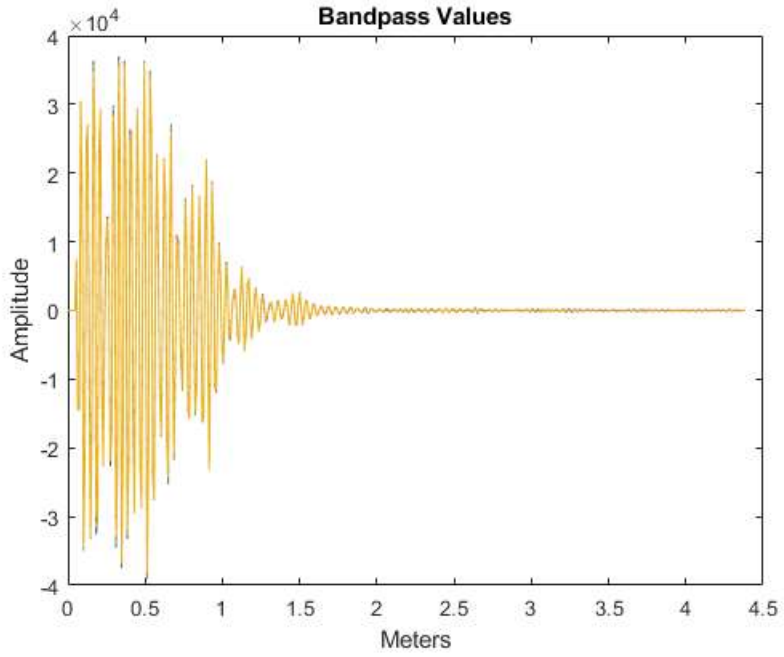
```
rawscansI = find([scn.Nfilt] == 1);
rawscansV = reshape([scn(rawscansI).scn],[],length(rawscansI))';
% band-pass filtered scans
bpfscansI = find([scn.Nfilt] == 2);
bpfscansV = reshape([scn(bpfscansI).scn],[],length(bpfscansI))';
% motion filtered scans
mfscansI = find([scn.Nfilt] == 4);
mfscansV = reshape([scn(mfscansI).scn],[],length(mfscansI))';
```

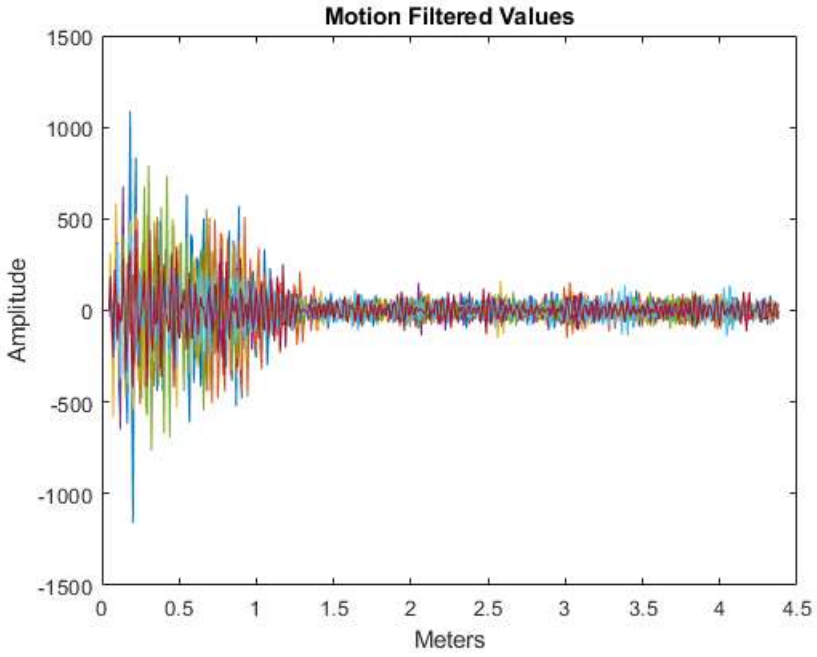
Create the waterfall horizontal and vertical axes

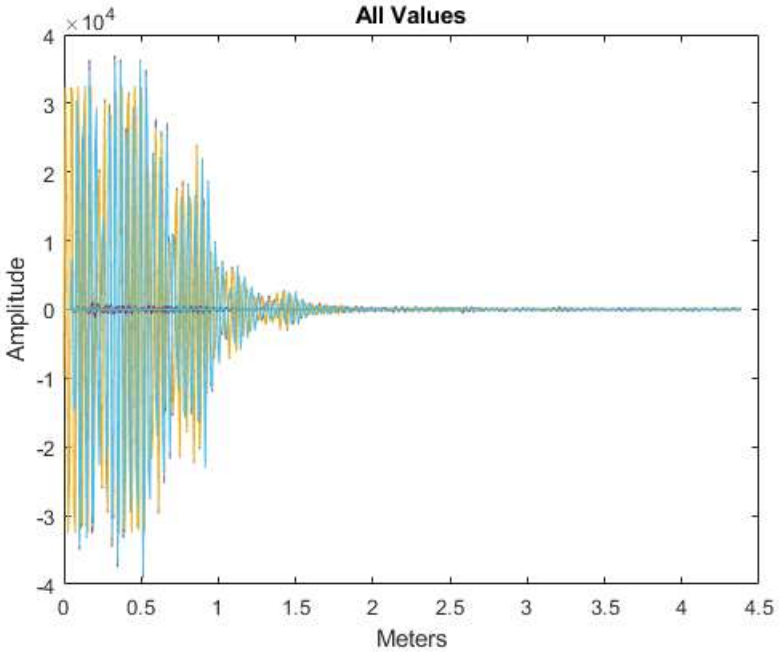
```
Tbin = 32/(512*1.024);  % ns
T0 = 0; % ns
c = 0.29979;  % m/ns
Rbin = c*(Tbin*(0:size(mfscansV,2)-1) - T0)/2;  % Range Bins in meters

figure
plot(Rbin, rawscansV)
title('Raw Scan'), xlabel('Meters'), ylabel('Amplitude')

figure
plot(Rbin, bpfscansV)
title('Bandpass Values'), xlabel('Meters'), ylabel('Amplitude')

figure
plot(Rbin, mfscansV)
```

```
title('Motion Filtered Values'), xlabel('Meters'), ylabel('Amplitude')

figure
plot(Rbin, rawscansV, Rbin, bpfscansV, Rbin, mfscansV)
title('All Values'), xlabel('Meters'), ylabel('Amplitude')
```









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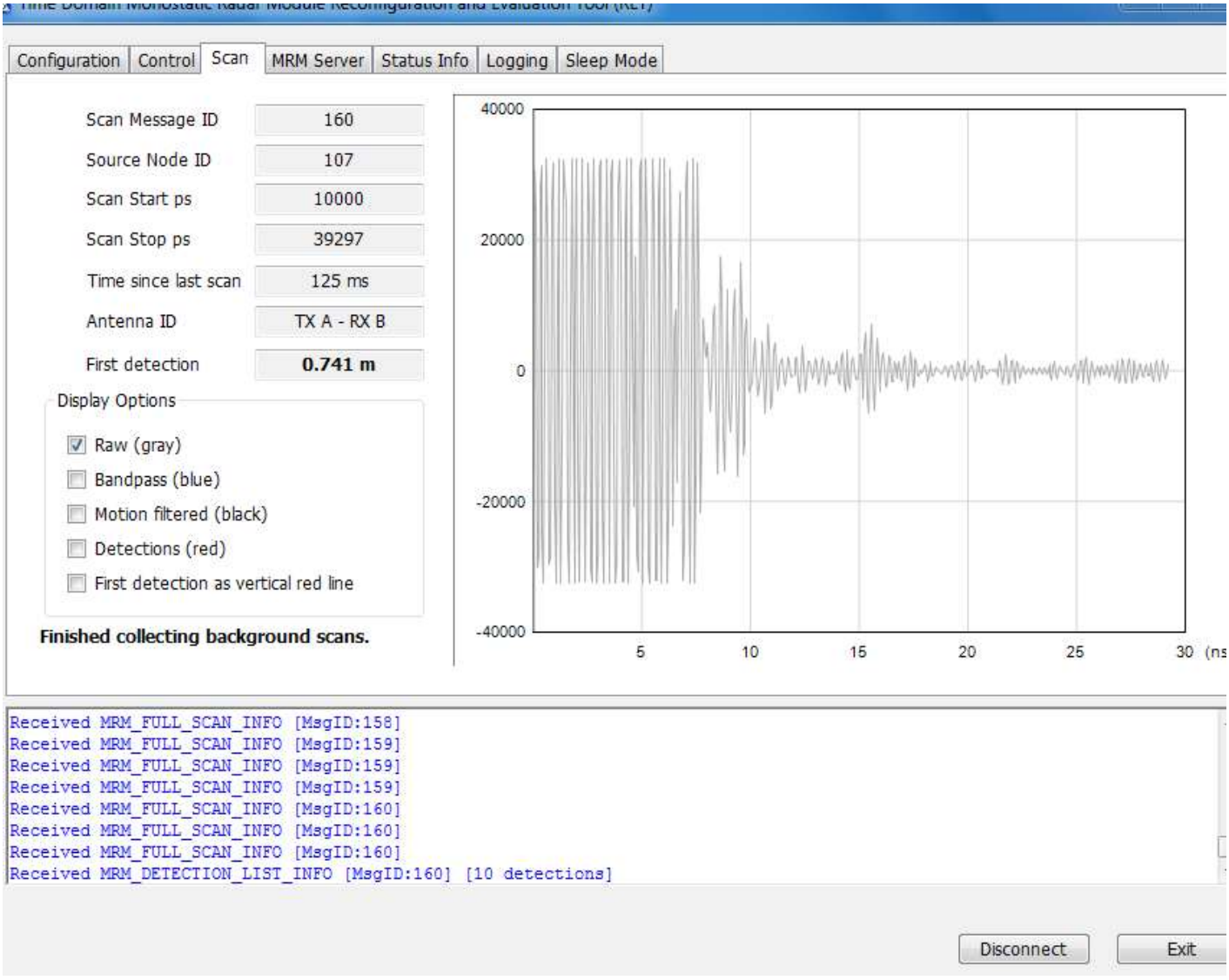
Consider Appendix C of the MRM RET Users Guide. Determine the power in Watts at the transmit antenna port for a transmit gain setting of 63 and of 0.

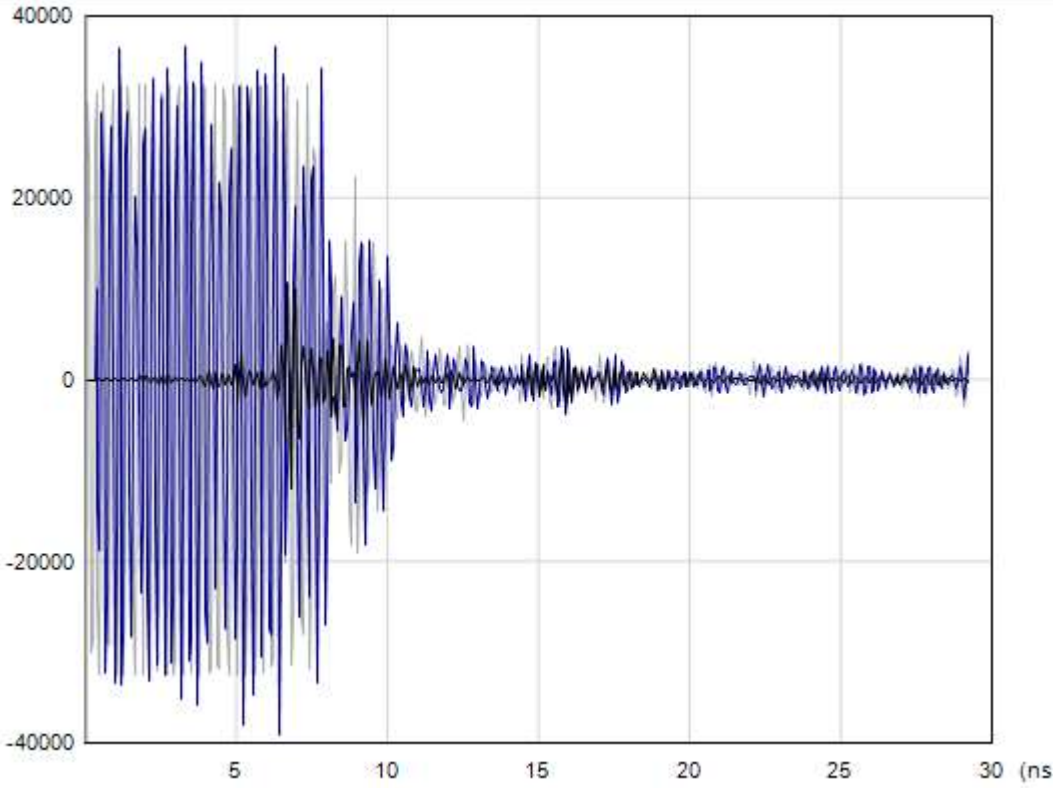
When the gain is 63 the power is 2.1 for P400, -12.64 for P410, and 0.71 for P410 w Amps.

When the gain is 0 the power is -14.53 for P400, -31.6 for P410, and -12.48 for P410 w Amps.

In the MRMplotter.m code, explain how Rbin vector (the x-axis for your plots) was constructed. Where does Tbin come from? (Hint: see the MRM RET Users Guide)

First you create a vector ranging from 0 to the size of mfscanV-1. This is multiplied by Tbin. Then multiply by c and divide by 2 since the pulses go in multiple directions. Tbin is the threshold. The Threshold Multiple is the number of standard deviations that a received signal must deviate from nominal in order to generate a detection.

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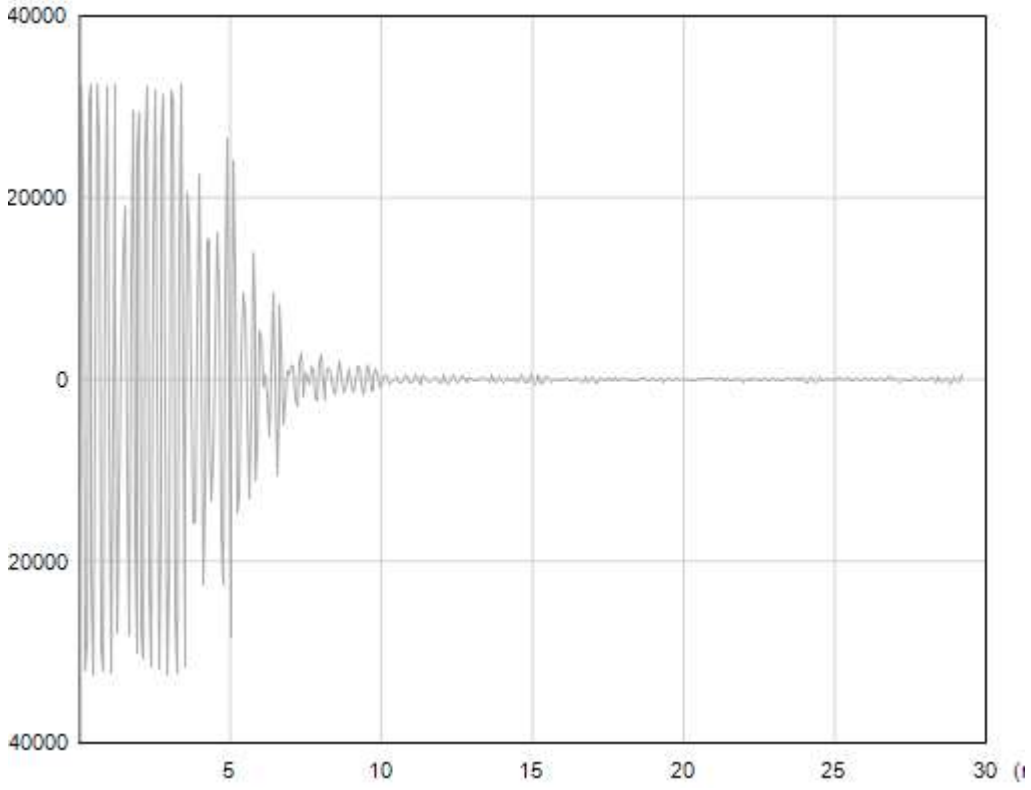
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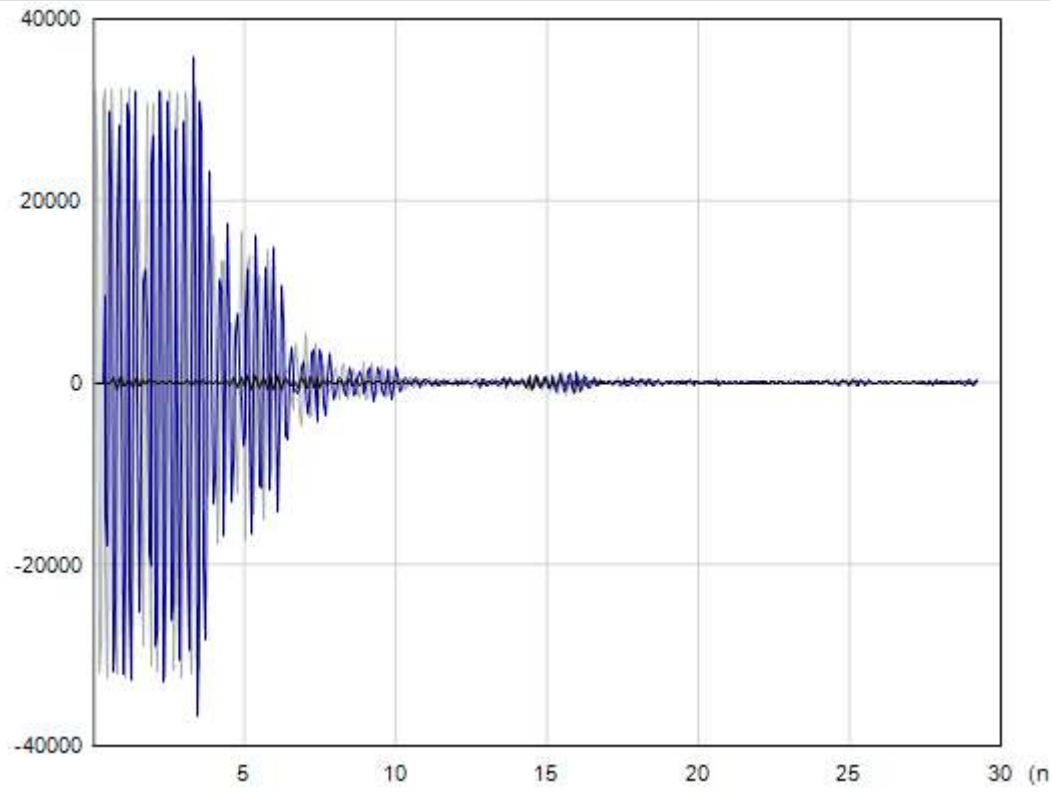
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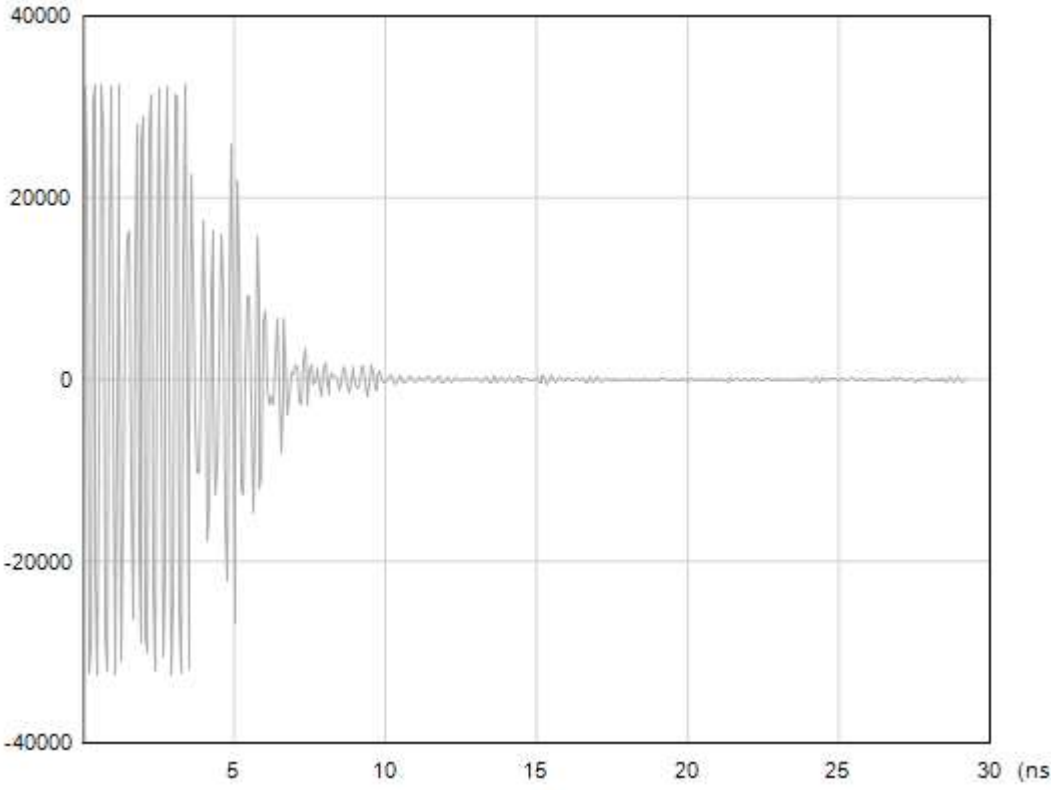
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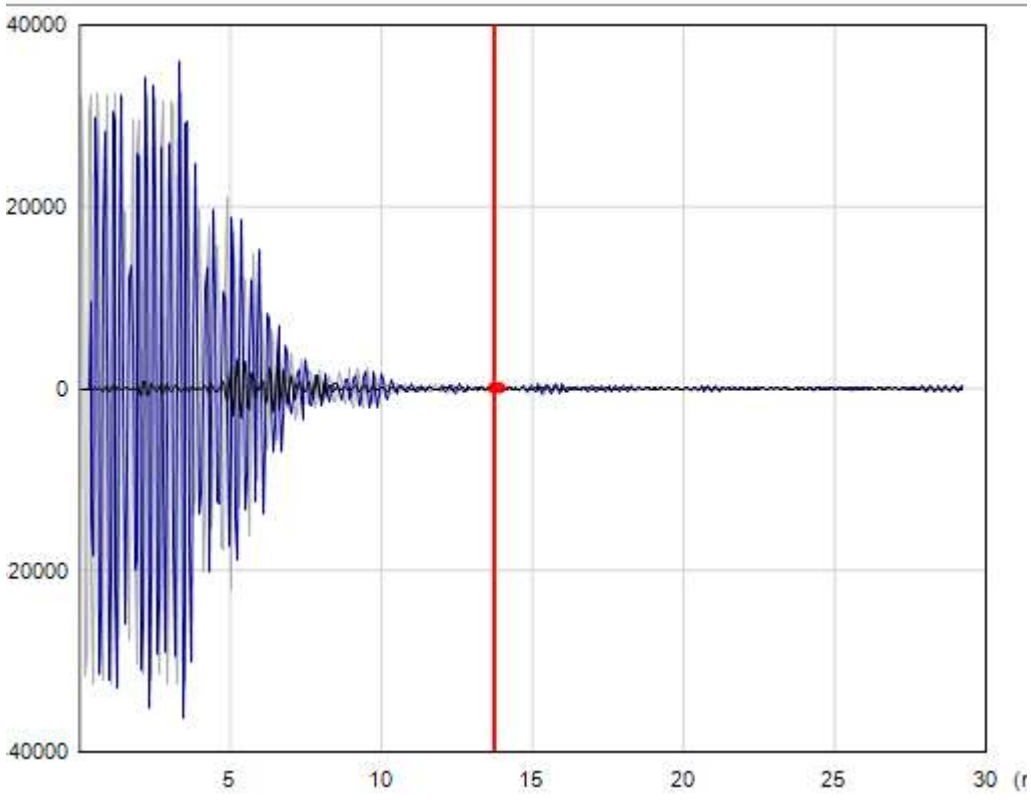
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