

Resynth short instructions

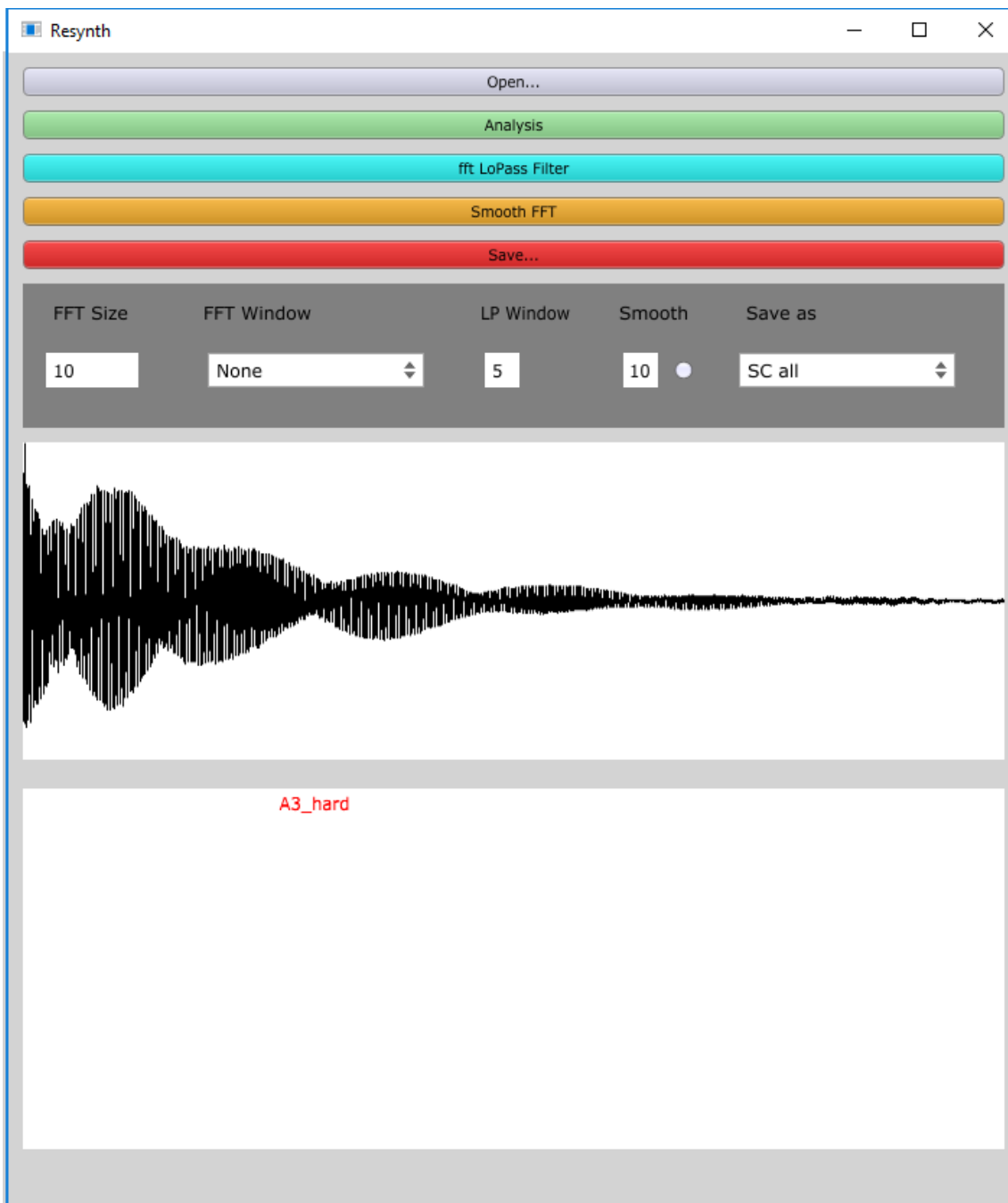
Opening screen:



The workflow is:

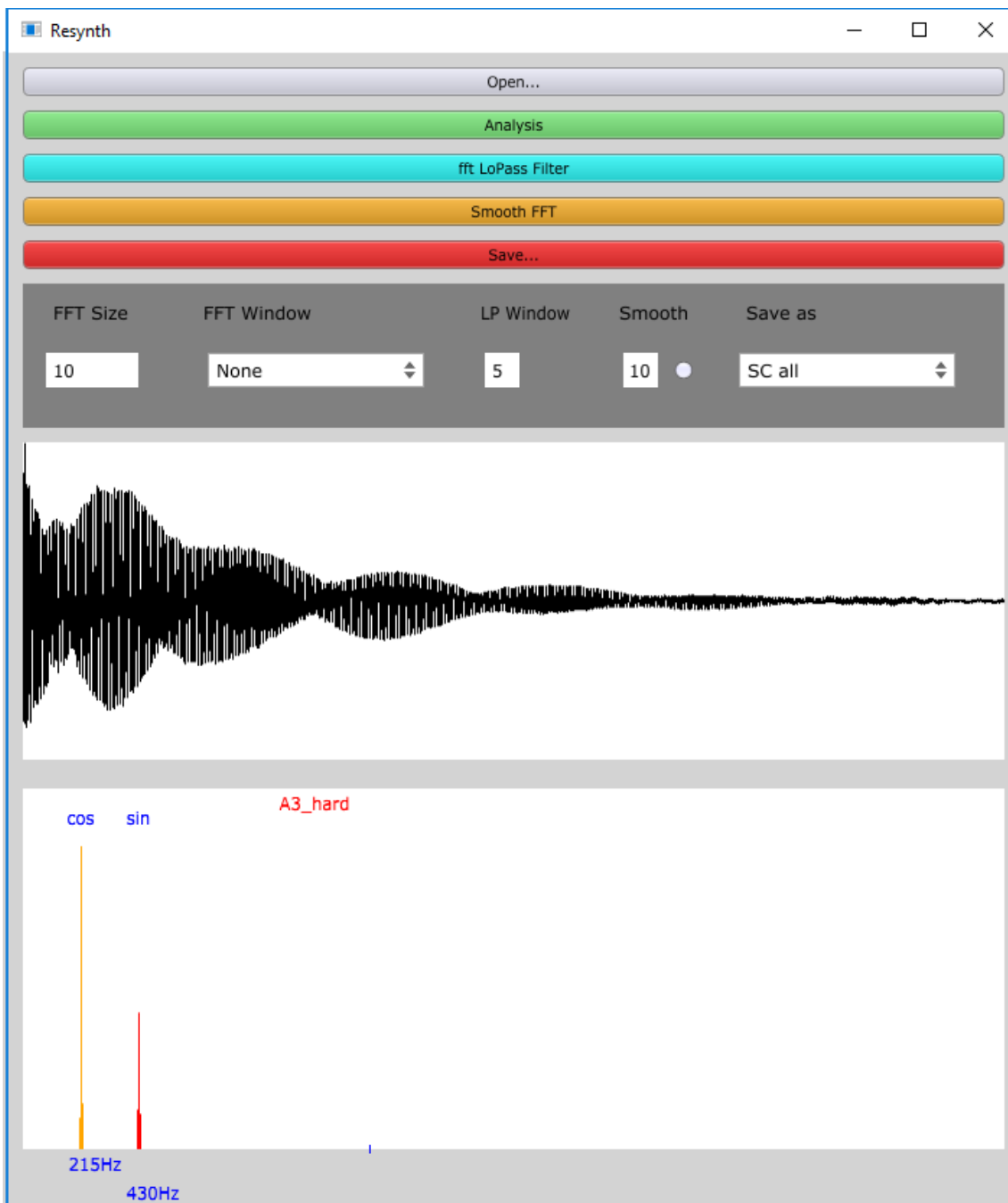
Use the open button to read the wave file (mono, 44100 S/R and less than 2s in length).

The screen looks like this:

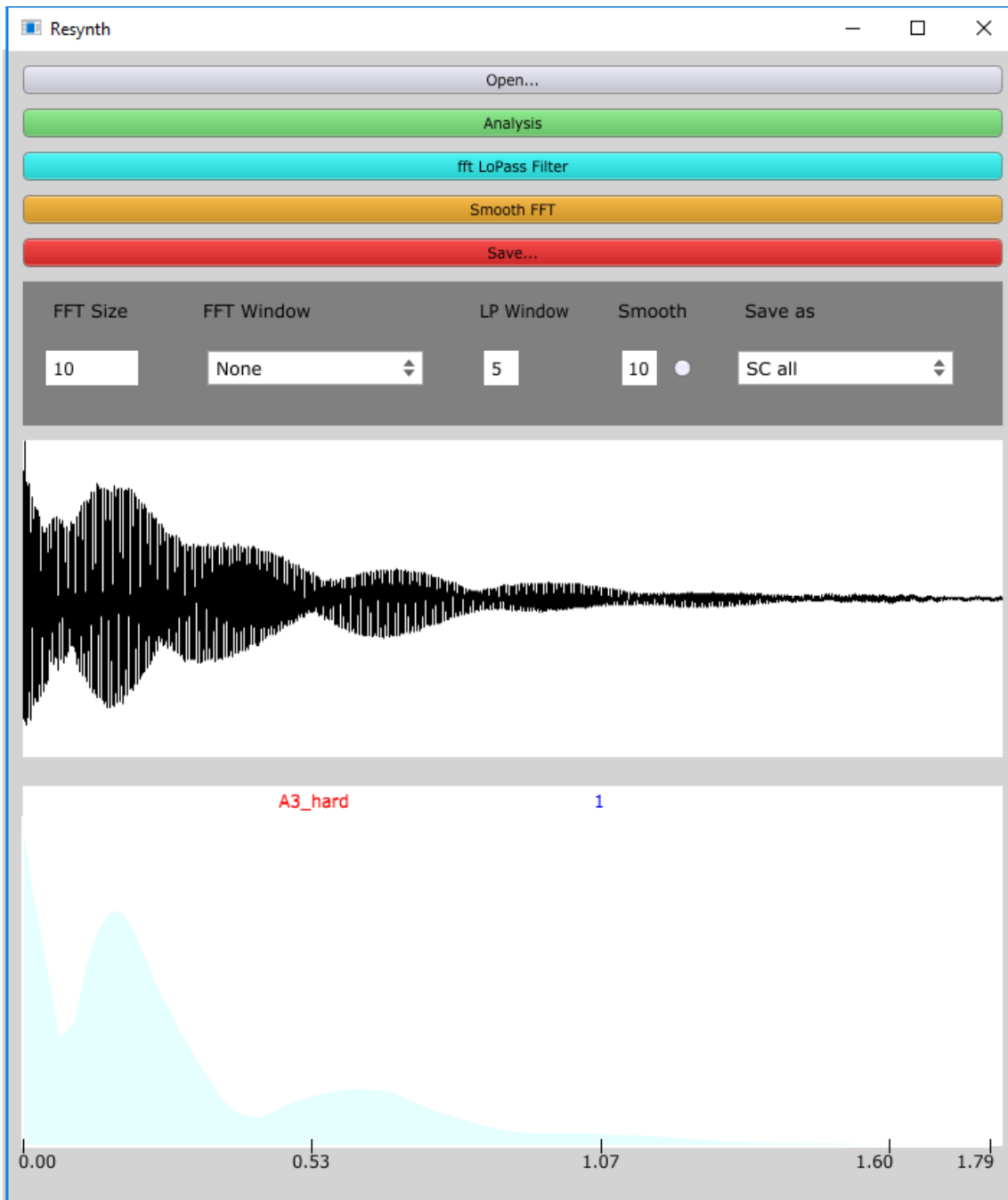


Next step is FFT analysis: you have the choice of FFT order ($2^{\text{order}} \Rightarrow \text{fft-size}$) and a window (none, Hann, Hamming and Blackman-Harris). Use the one, which give the best sounding results with minimal number of segments. Order is restricted to be between 10 and 13. If you need the order to be < 10 , then you have to reduce the length of the wave file.

After Analysis, the screen looks like this:

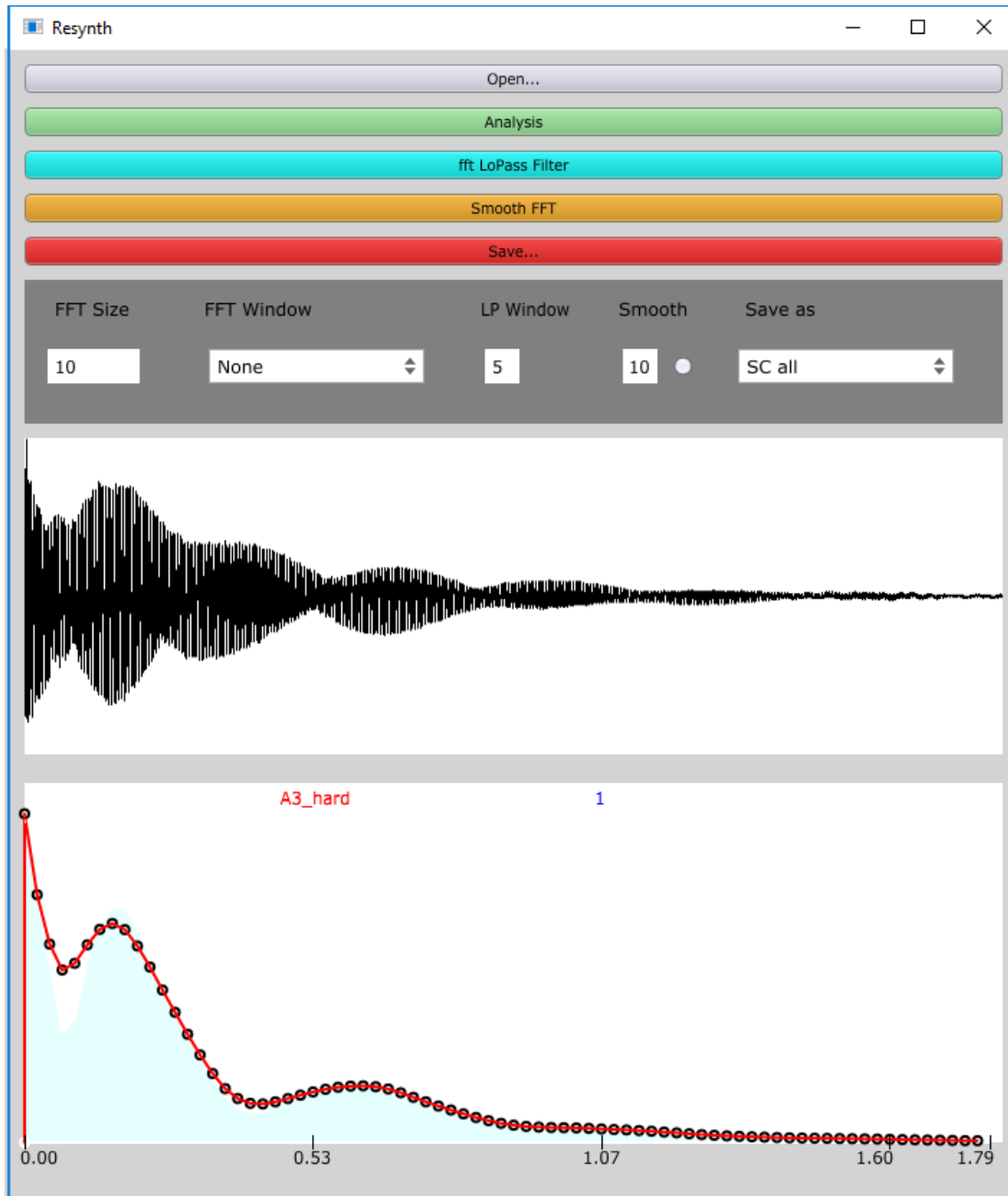


You can see now all spectral lines, whose energy is greater than a certain level. Also the phase shift and frequency is shown. Do view a partial, click on any spectral line. It should turn blue. If you double-click now, the partial screen will show.



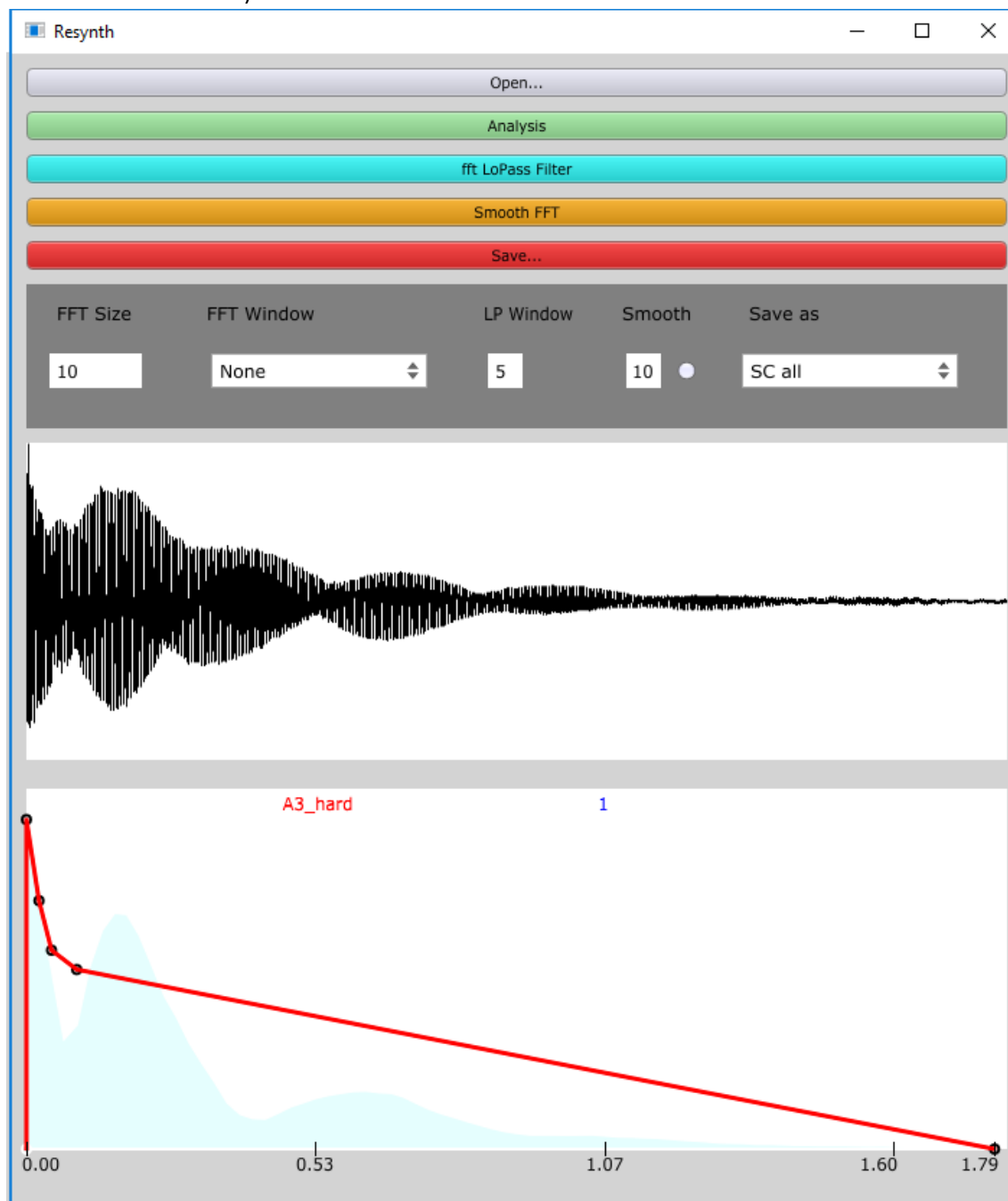
You now have the option to apply a low-pass filter to the partial's segments (push the fft LoPass Filter button. You can vary the filter by changing 'LP Window': the number must be

odd:



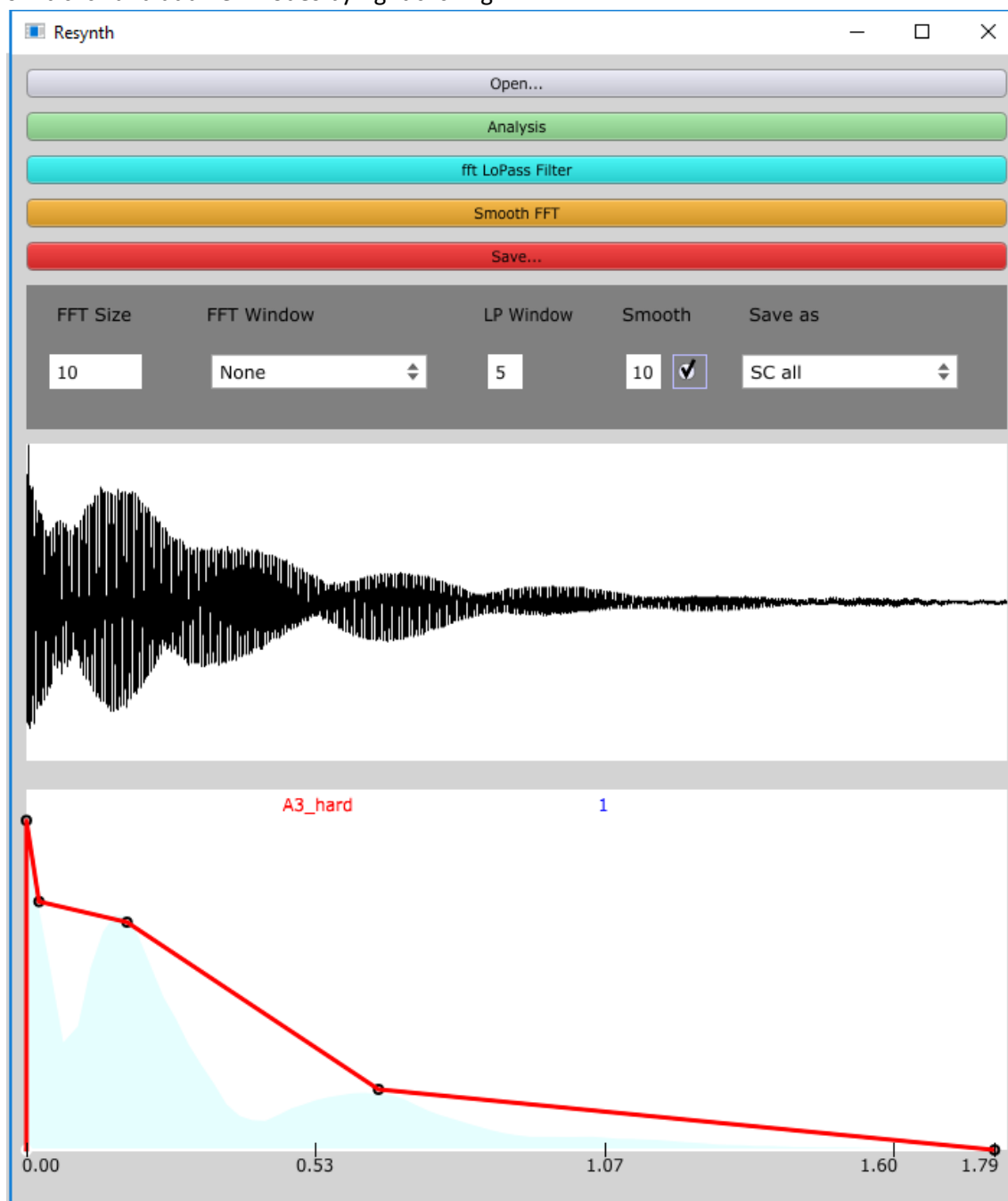
As you can see, some valleys were smoothed out. To reduce the number of segments, use the Smooth FFT button. You can vary the details by changing the Smooth factor (1=no smoothing,

10=reduce reasonable):



(you can switch from Smooth to LP view by clicking the checkbox beneath Smooth, and clicking anywhere in the partial screen). Double clicking in the partial screen brings you back to the spectral view)

You can edit in smooth view by selecting a node and drag it around. You can delete nodes by shift-click and add new nodes by right clicking:



When you're happy with your partials, you can export them by using the Save button. You can select what outputs (raw, lp'ed, smoothed or all of them) using the save-as combobox. (Scope is a different DSP system)

Once you saved everything, you can use this script to load the data into SC and create the instrument:

```
(
  var x, ev=75;
  x = CSVFileReader.readInterpret("c:\\resynth\\A3_hard_RAW.seg", true,
true);
~partials=x[0][0];
~ph=Array.fill(~partials, {arg i; -1*x[i*3+3]*pi/2});
~ea=Array.fill(~partials, {arg i; Env(x[i*3+2]/ev,
x[i*3+1]/1000, curve:'lin')}));
)
x.play
(
SynthDef("A3_hard", {
  arg freq=440, gate=0, amp=0.5, pan=0.5, bend=0, parts=~partials;
  var x, i=0;
  var mask=(1..~partials).collect{|i| i<=parts}; // binary mask
  mask.postln;
  x = Mix(Array.fill(~partials, {arg i; SinOsc.ar(freq *
(i+1)*bend.midiratio, ~ph[i],
mask[i])*EnvGen.kr(~ea[i], doneAction:0)}));
  x = EnvGen.kr(Env.adsr, gate, doneAction: 2) * x;
  x = x*amp;
  Out.ar(0, Pan2.ar(x, pan));
}).add
)
```

The segments are saved as <intrument>_RAW, <intrument>_LP and <intrument>_SM. For convinience, the default dir is c:\resynth.

If you change `ev=75` with a lower value, you can increase the volume.