guitarFineTune

User's guide

Rev. 5.1.1

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guitarFineTune in short.

- guitarFineTune is an app. that aids in tuning electric and acoustic guitars.
- It has a very high resolution. Measurements are in 0.1 Hz resolution.
- All strings can be tuned simultaneously. The measured sound for all 6 strings are all shown at the same time, and compared with the sounds for the strings as they must be, when the guitar is in perfect tune.

Launch.

If you are on iOS the first page shown is the one in figure 1

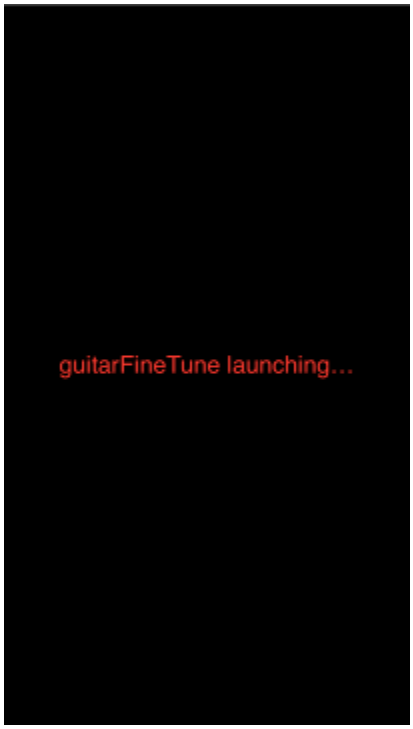

Figure 1 First page on iOS.

If you are on Windows or macOS the splash in figure 2 is shown

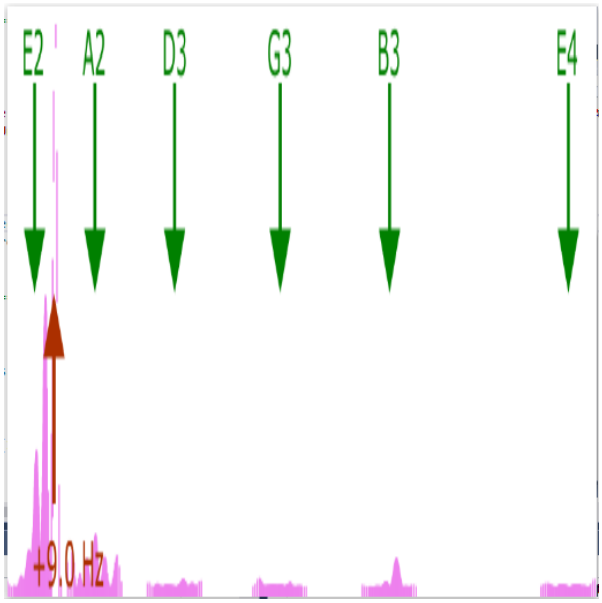

Figure 2 the first page on Windows or macOS.

Permission to use microphone.

If you are using iOS or Android, and guitarFineTune is launched for the first time, then you are asked permission to use the microphone, figure 3.

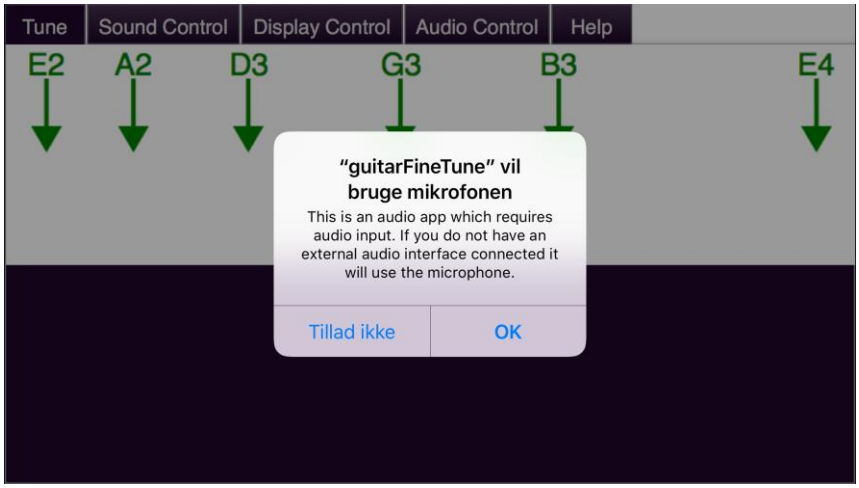

Figure 3 Permission to use microphone.

Just press OK, if you find it OK.

Pages/Tabs in guitarFineTune.

On top of the screen in guitarFineTune there are 5 tabs that are used to switch between pages, figure 4.

Each tab in guitarFineTune is describes in the following paragraphs.

Figure 4 the tabs.

Tune

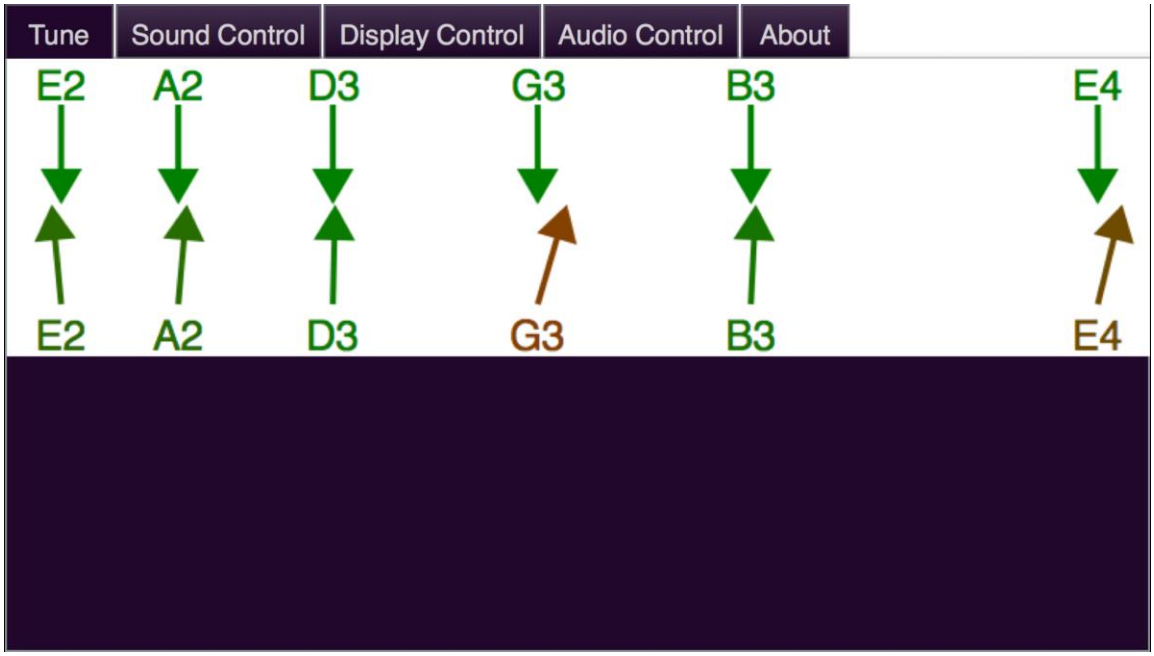

Figure 5 Page used when tuning the guitar.

The Tune page, figure 5, is the main page in guitarFineTune. That is the one used, when tuning the guitar.

E2, A2, D3, G3, B3 and E4 are the guitar strings.

The arrows pointing downwards represent the right guitar string tones.

The upwards pointing arrows show the actual measured string tones. They get more and more red and turned, the more the string is out of tune.

Sound Control

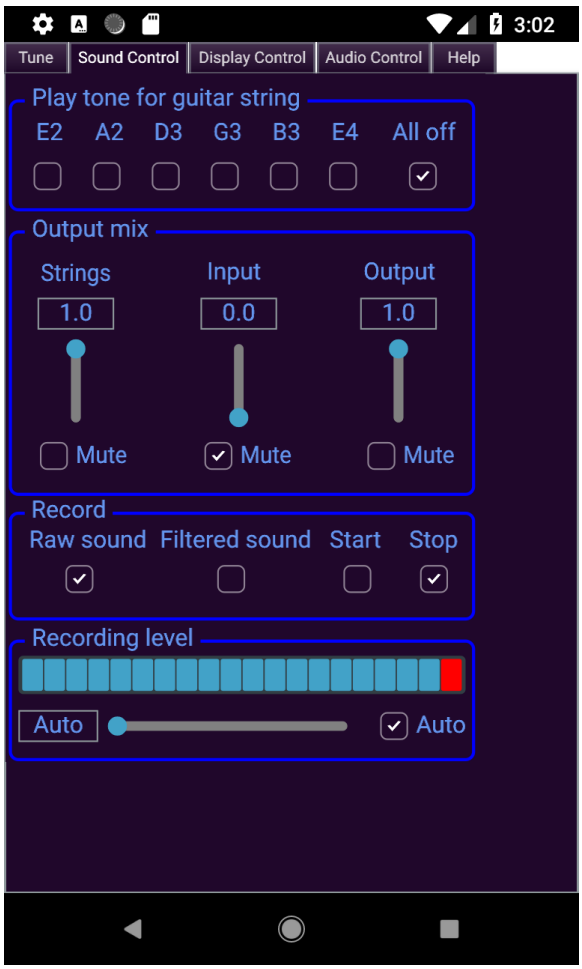

Figure 6 Sound Control page

Play tone for guitar string

Play the sound that the guitar strings should have. A fairly good loud speaker is required.

E2

Play tone for guitar string E2 (82 Hz).

A2

Play tone for guitar string A2 (110 Hz).

D3

Play tone for guitar string D3 (147 Hz).

G3

Play tone for guitar string G3 (196 Hz).

B3

Play tone for guitar string B3 (247 Hz).

E4

Play tone for guitar string E4 (330 Hz).

All off

Turn off all string sounds.

(If you click on a string tone again after having clicked it on the tone will be turned off, but with "All off" you can stop all tones with one click).

Output mix

Mix the input sources and control the output level.

Strings

Control the level for the string sounds.

Input

Route the input source (e.g. microphone or electric guitar) to the output and control the level for the input source.

Output

Control output the level for the mix of guitar string tone and input.

Text boxes

If you click on the text boxes above the sliders you can type in the desired value.

Record

Select the source for audio recording.

Raw sound

Is recorded directly from the sound capture device (internal/external microphone or electric guitar).

Filtered sound

Is recorded after the filters in guitarFineTune (e.g. the 50 Hz filter which you can enable/disable on the Audio Control page).

Start

Start the recording.

Stop

Stop the recording.

When recording is stopped then

- If guitarFineTune is running in Windows or macOS/X then a dialog similar to the one in Figure 7 pops up so you can save the recording if you wish.
- If uitarFineTune is running in iOS or Android then a dialog similar to the one in Figure 8 pops up so you can share the recording if you wish.

Recording Level

Control the level of the sound that is recorded

Level Meter

Is shown that shows the max peak values of the sound from the selected sound source.

Gain slider

Control the gain that is applied to the sound from the sound source.

- If the gain is set to **0.00** the gain is calculated automatically. Thus the gain is calculated so the max peak levels are 100%, (thus the level meter will constantly show max).
- If you click on the text box at the slider you can type in the desired value.

Auto

The gain is calculated automatically (always set to maximum possible).

- If "Auto" is clicked off the latest calculated gain wil continue to work. You can control the gain as you wish.

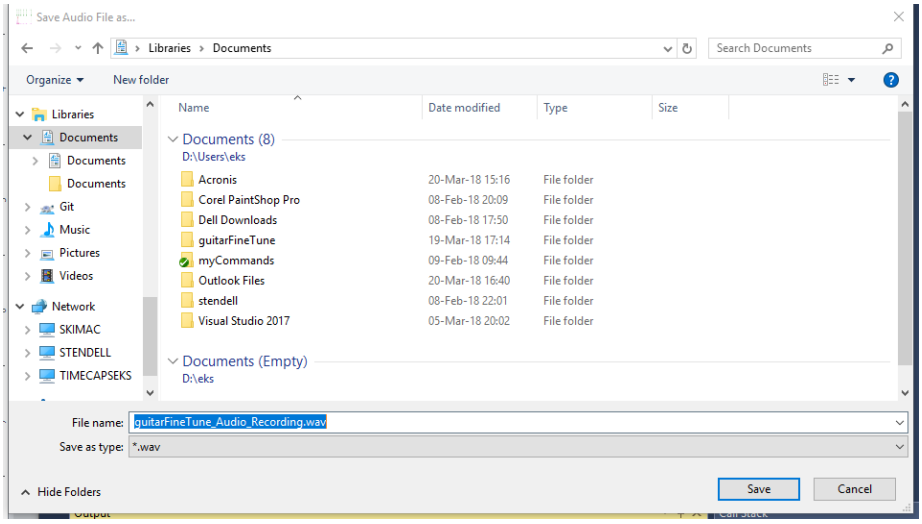

Figure 7 Save Audio File as ... dialog

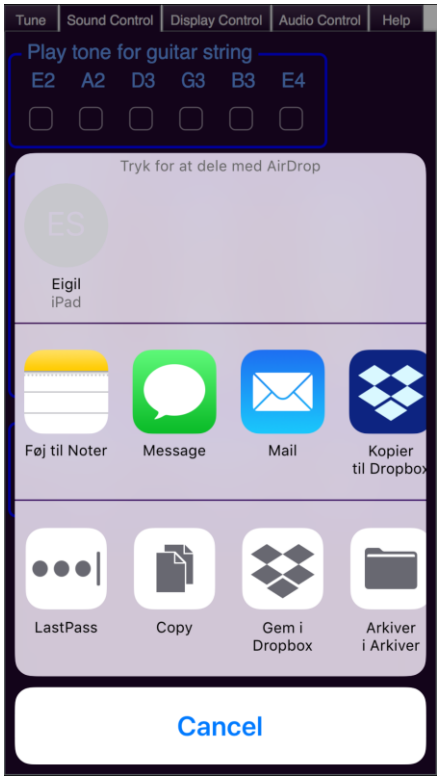

Figure 8 Share dialog

Display Control.

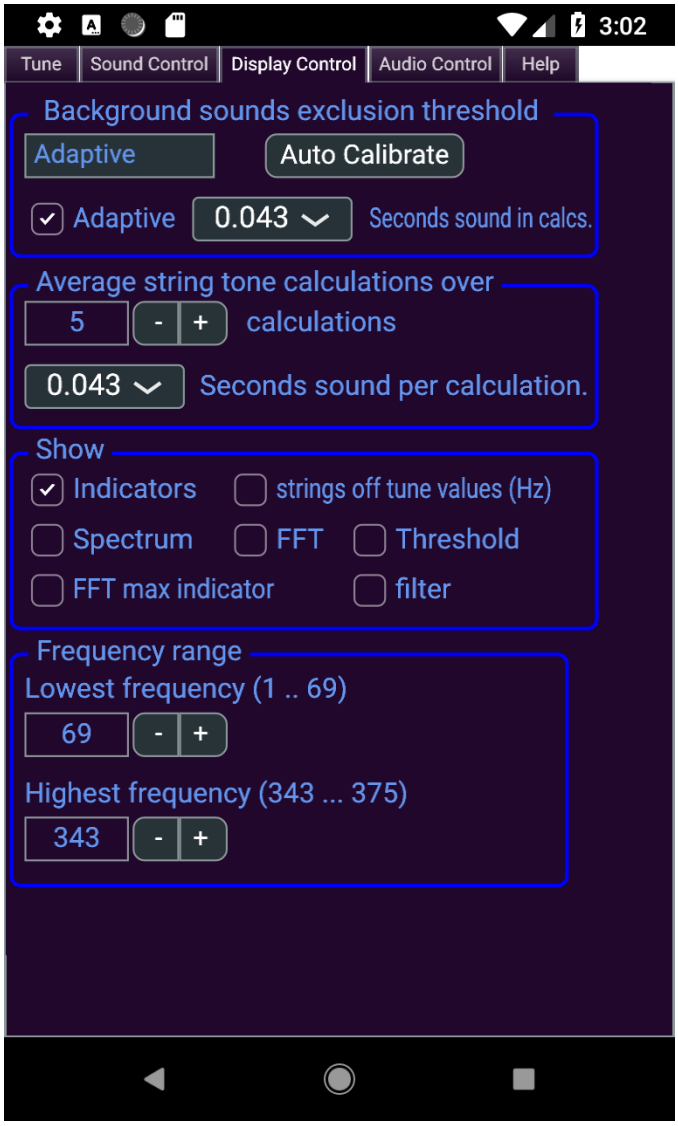

Figure 9 Display Control page

Background sounds exclusion threshold

Is a level that the measured sounds must be above to be included in the calculations. This is done to exclude noise.

Text box

You can either enter one number for all strings in the box with the text Adaptive on figure 9.

Auto Calibrate

If you press "Auto Calibrate" the window in figure 10 pops up. While that window is shown, the sound around is measured, and later regarded as noise and excluded. HINT: While Auto Calibrate is running you should make those noises that can disturb the measurements while tuning. E.g. guitar noises as e.g. picking the strings. So you could make all the noises on the guitar except the string sounds, while Auto Calibrate is running.

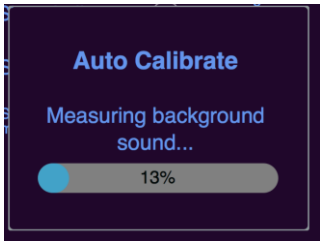

Figure 10

Adaptive

The background sound exclusion threshold is calculated automatically and continuously.

Seconds sound in calcs.

Controls how many seconds of measured sound is included in each calculation of the background sound exclusion threshold.

Average guitar string tone indicators over

The number of tone calculations that the actual guitar string tone must be averaged over. This gives more steady indicators but also slows down the display update a bit.

Calculations

The end positions of the indicators for the actual guitar strings sounds (upwards pointing arrows) are averaged over this number of calculations.

Seconds sound per calculation.

The actual tone/frequency for a given string on the guitar is calculated from a sequence of measurements, (samples), of the sound. Here you can chose how many seconds of sound is to be used per calculation.. The higher the number the more accurate is the calculated tone, but it also slows down the update of the display.

This value controls how often the drawings on the Tune page is updated and also how often the "Background sounds exclusion threshold" is calculated, if Adaptive is on. Because of that, changing "Seconds sound per calculation" may also change the value in "Seconds sound in calcs."

Show

Controls what is shown on the Tune page.

Indicators

Select if the upwards pointing arrows are shown.

Strings off tune values (Hz)

Show (in Hz) how much each guitar string is out of tune (instead of the strings name).

Spectrum

Show frequency spectrum of the sounds.

FFT

Show FFT (Fast Fourier Transformation) spectrum.

FFT max indicator

Place a marker at the max value in the FFT spectrum.

Threshold

If on a short blue horizontal line in shown on the Tune page at each guitar string, indicating the current "Background sounds exclusion threshold".

Filter

Show a curve showing the characteristics of the filter(s) in use.

Frequency range

The frequency range that is shown on the Tune page.

Lowest frequency (1...69)

The lowest frequency included on the Tune page.

Highest frequency (343 ... x)

The highest frequency included on the Tune page.

Audio Control.

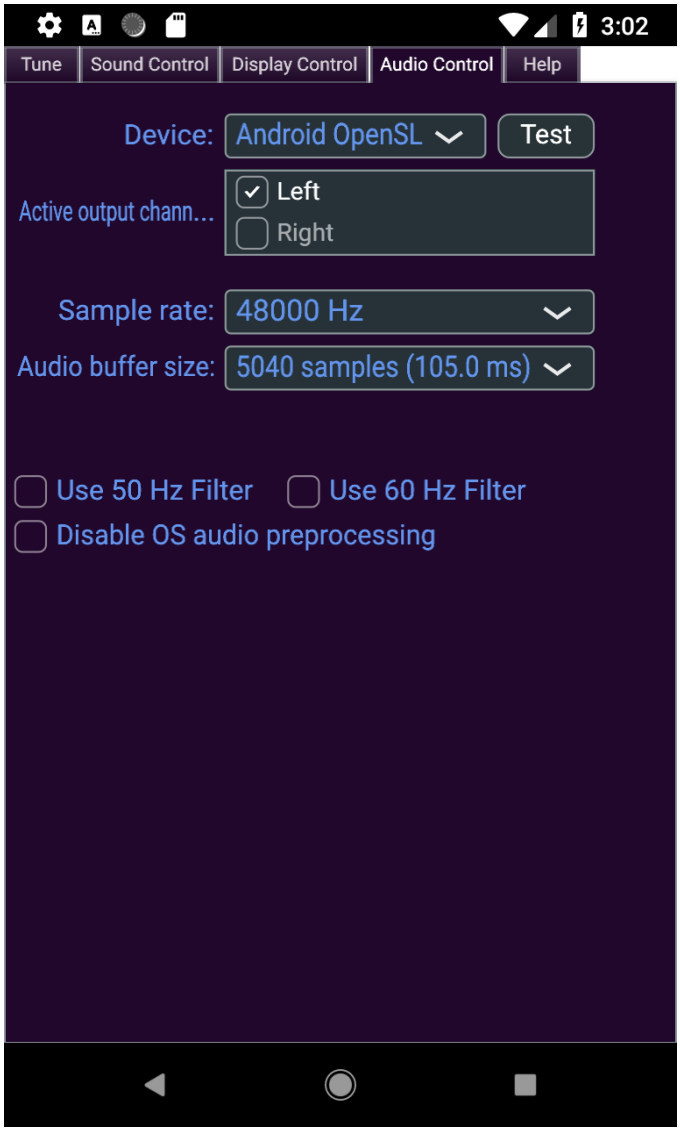

Figure 101 Audio Control

On this page you can control how the audio system in the Operating System is used.

Normally the values are automatically set to reasonable values, but you can change them if necessary.

If you press Test you should hear a 440 Hz sound if the audio system is right configured.

Use 50 Hz Filter

guitarFineTune has a built in 50 Hz filter, that filters out 50 Hz. The filter can be used, if there is 50 Hz noise in the surroundings.

Use 60 Hz Filter

guitarFineTune has a built in 60 Hz filter, that filters out 60 Hz. The filter can be used, if there is 60 Hz noise in the surroundings.

About 50 and 60 Hz filters

50 and 60Hz are the frequencies on the power grid in e.g. Europe (50 Hz) and USA (60 Hz).

You can check if your sound system is infected with the power grid frequencies:

- On the "**Display Control**" page
  - In "**Show**" switch FFT on and switch everything else off.
  - In "**Frequency range**" set "Lowest frequency" to the lowest possible (1) (and eventually "Highest frequency" to the highest possible).
- Then on the "**Tune**" page check if the FFT spectrum has a peak at 50 or 60 Hz.
  - If there is a peak at 50Hz the switch on "**Use 50 Hz Filter**" on the "Audio Control" page
  - If there is a peak at 60Hz the switch on "**Use 60 Hz Filter**" on the "Audio Control" page

Disable OS audio preprocessing

iOS and Android have built in preprocessing of sound. This preprocessing can be disabled (might give a greater bandwidth).

About

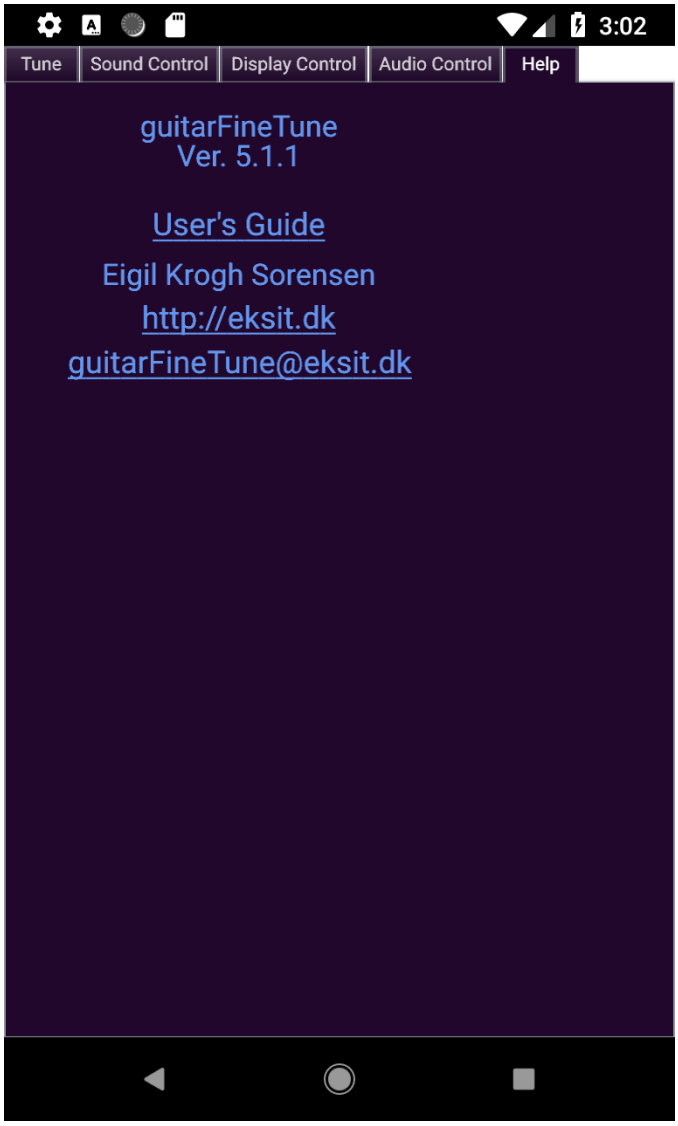

Figure 12 The About page.

Here you find web site and contact info.

Have a good time!

Kind Regards
Eigil Krogh Sorensen