

# Amadeus II reference guide

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## Introduction

Thank you for choosing **Amadeus II**. This shareware is a powerful tool that allows easily to record, play, analyze and manipulate sounds. It provides several quite professional features like direct-to-disk sound manipulation and 24Bit sound handling.

This reference guide describes briefly the main functions of **Amadeus II**. It is by no means supposed to be exhaustive. The functionalities described here apply to **Amadeus II v2.12**. Some functions are not present on older versions.

## About Amadeus 1.44

**Amadeus 1.44** is the most recent version of the first generation of **Amadeus**. **Amadeus II** has been rewritten entirely from zero, it is not just an update of version 1.44, so there are some functionalities of version 1.44 that are not implemented yet. In the case you want to use them, your registration code for **Amadeus II** also works for **Amadeus 1.44**. You can download it from my homepage at

<http://www.erehwon.org/hairer/>

or

<http://www.unige.ch/math/folks/hairer/martin/>.

## 1 The documents

There are three types of documents handled by **Amadeus II**.

### 1.1 The sound windows

They are the main “working place”. The sound is depicted as a wave showing the pressure as a function of time. If you create a new window, it is gray, meaning that no sound is present. In order to select a part of the sound, just click at the beginning of the select and drag the mouse until the end of the selection. If the sound has several channels, all of them will be selected. In order to select only one channel, hold down the “option” (“alt” on some keyboards) key.

There are three small icons at the left bottom of the window. The first one allows to change the time scale at which the sound is to be drawn. If you click onto the second one, a dialog showing the characteristics of the sound opens. If the sound is currently stored on a hard disk, you can try to load it into RAM. The last icon allows to set the volume level at which the sound is to be played.

The small icon at the top right of the window allows to change the amplitude scale of the displayed sound.

### 1.2 The sonogram windows

A “sonogram” is a graphic representation of a sound showing the frequency as a function of time. The amplitudes of the different frequencies are shown as colors. For example, a pure sound will be represented by a straight horizontal line, because there is only one frequency present. Sonograms are a quite useful tool to compare sounds or to find out which notes are present in an accord for example.

A sonogram window is composed of three parts: A tool bar, the sonogram itself and the sound from which it was produced.

**The tool bar.** The “colors” frame contains a pop-up menu that allows to change the color palette and a slider that allows to change the color scale of the sonogram. The color scale

determines which color has to be attributed to which amplitude. If you glide the slider to the right, the color scale becomes more sensitive, *i.e.* small amplitudes will become visible.

The second frame contains two icons. The first one opens a dialog that allows to set the different color palettes. The second one opens a dialog that allows to change the different parameters of the sonogram. Here is a short description of them. **Max. Frequ.** is the maximal frequency shown in the sonogram. If you lower it, you will have a better vertical resolution but you will cut off the high frequencies. **Sizes FFT** is the number of points considered in one Fourier transform. If you increase this value, you increase the quality of the sonogram, but the computation gets slower. **Sizes Picture** is the vertical size of the sonogram. **Scale** allows to choose between a linear and a logarithmic frequency scale.

**The sonogram.** If you click into this part, a small window appears, showing the frequency corresponding to the location of the mouse, as well as the note that is closest to that frequency.

You can copy the sonogram into the system scrap by choosing **Copy** in the **Edit** menu.

**The sound.** This part of the Sonogram window behaves exactly like the Sound window, but you cannot select anything. The three small icons in particular have the same behaviour.

### 1.3 The spectrum windows

A “spectrum” is a graphic representation of the amplitude as a function of the frequency at one point of a sound. A spectrum is in fact a “vertical cut” of a sonogram. The meaning of the functions present in the spectrum windows should be quite clear from what has been said about the sonogram windows.

## 2 The floating palettes

There are three floating palettes which can be shown/hidden using the submenu **Floating palettes** of the **Edit** menu. Here is a short description of their contents.

**The commands palette.** There are four icons appearing in this palette. Each of them is linked to a menu item, *i.e.* clicking on it has the same effect than choosing the corresponding menu item.

The icon symbolizing a microphone is linked to the “Record” item of the “Edit” menu.

The icon symbolizing a highspeaker is linked to the “Play” item of the “Edit” menu.

The icon symbolizing a spectrum is linked to the “Spectrum...” item of the “Analyze” menu.

The icon symbolizing a sonogram is linked to the “Sonogram...” item of the “Analyze” menu.

**The memory palette.** The progress bar shows the fraction of the heap used by **Amadeus II**. **Total memory** is the total amount of the heap allocated to **Amadeus II** by the system. This amount can be changed by selecting the application program in the Finder and selecting the “Get info...” item in the “File” menu. **Free memory** is the part of the heap that is not used by **Amadeus II**.

**The selection palette.** It contains the coordinates of the selection of the sound contained in the frontmost window. The first time is the length of the selection, the second one is the start of the selection and the last one the end of the selection. The units can be changed in the **Preferences...** dialog of the **Edit** menu.

## 3 Menu commands

### 3.1 The “File” menu.

**“New”.** Creates a new sound file. The characteristics of this file can be set in the **Preferences...** dialog of the **Edit** menu.

**“Open...”.** Allows to open a file (sound or sonogram) previously saved on disk. Currently recognized sound formats are AIFF, compressed AIFC and System 7/8 sfil. The recognized sound compression formats are those provided by the SoundManager, which varies from one system to another (a-Law compression is only recognized under MacOS 8.5 and later).

If NavigationServices are present (MacOS 8.5 and later), they are used by version 2.11 and later. If there is not enough memory left to load the sound, **Amadeus II** opens it anyway and handles it direct-to-disk. This is very useful to open huge sounds, but of course the performance of the program will decrease.

**“Close”.** Closes the frontmost window. If it contains an unsaved document, asks the user if he wants to save it.

**“Save”.** Saves the content of the frontmost window on the hard disk. If there is no file associated to that window yet, the behaviour of **Save** is the same than that of **Save as...**

**“Save as...”.** Shows the standard saving dialog. If NavigationServices are present (MacOS 8.5 and later), they are used by version 2.11 and later. If the document to be saved is a sound, you can choose between two formats (Audio International File Format and System Sounds) and several compression laws. Some compression laws may be grayed out, that means that they are not recognized by your version of the SoundManager. If you compress a sound, some quality may be lost, particularly if the compression rate is high, so test the results of the different laws before you use them.

**“Print...”.** Not implemented yet.

**“Page setup...”.** Not implemented yet.

**“Quit”.** Terminates the program after closing all documents.

### 3.2 The “Edit” menu.

**“Undo”.** Undoes the last action performed in the frontmost window. For Sound windows, multiple undoing is supported up to a level that can be set in the **Preferences...** dialog.

**“Redo”.** Annihilates the effect of **Undo**.

**“Cut”**. Equivalent to **Copy** followed by **Clear**.

**“Copy”**. Copies the selection of the frontmost window into the scrap. If the window is a Sound window, the selection is copied into the current internal scrap. The current scrap can be chosen in the **Scrap** submenu. If you switch to another application, the current scrap is placed into the system clipboard, provided you checked the "export scrap" box in the **Preferences...** dialog.

**“Paste”**. If no sound is selected, it inserts the content of the current scrap at the insertion point of the frontmost Sound window. If a sound is selected, the selection is deleted first. If the quality of the scrap doesn't fit the quality of the frontmost Sound window, the content of the scrap is first converted as to fit that quality. Notice that the content of the scrap is not affected by this operation. If you switch from another application to **Amadeus II** and the system clipboard contains some sound data, it is placed into the current scrap.

**“Paste special”**. Mixes the content of the current scrap to the sound contained in the frontmost Sound window. It will start exactly at the beginning of the selection, not depending of the size of the selection. If the qualities don't fit, the content of the scrap is also automatically converted.

**“Clear”**. Deletes the current selection.

**“Select all”**. If the frontmost window is a Sound window, extends the selection of the sound to the whole sound.

**“Jump to selection”**. Changes the **time scale** and the position of the scrollbar of the frontmost Sound window in a way that the selection fills exactly the width of the window.

**“Current scrap”**. Allows to change the current scrap.

**“Floating palettes”**. Allows to show/hide the different floating palettes.

**“Preferences...”**. Opens a dialog that allows to change the behaviour of **Amadeus II**. In particular, you can set the default quality of a new sound and the units at which a time has to be displayed.

**“Reload effects”**. Searches for external filters present in any subdirectory of the directory containing the application file. This is mainly useful for development purposes when you change an external filter and want to test it without quitting **Amadeus II**.

### 3.3 The “Sound” menu.

This menu regroups mainly the items involved in the acquisition and the reproduction of sound.

**“Play”**. Plays the sound contained in the frontmost Sound Window. If the selection is longer than a few milliseconds, only the selection is played, otherwise the whole sound is played. This menu item can be accessed by pressing the space bar.

**“Play from insertion.”**. Similar effect than **Play**, but the sound is played starting from the beginning of the selection until the end of the sound is reached.

**“Record...”**. Opens a window that allows to record a sound from any input device recognized by the SoundManager. The first progress bar indicates the length of the recorded sound (If it is filled, the maximal length has been reached). The maximal length depends on the available disk space. The second progress bar indicates the volume level measured by the active input device. The “Peak” indicator turns red if a too high level has been reached at least once during the recording.

**“Jump to play position.”**. When a sound is currently being played, this function selects 250 milliseconds of sound about 0.2 seconds before the actual playback position and then calls the **Jump to selection** function. This can be quite useful to detect the position of a crack in a sound for example.

**“Stop”**. Stops playing the frontmost sound. If the **Recording** window is open, stops the recording.

**“Pause”**. If the **Recording** window is open, pauses the recording.

**“Resume”**. If the **Recording** window is open, resumes the recording.

**“Characteristics...”**. Opens a dialog allowing to change the characteristics of the frontmost sound. This operation can be undone in version 2.1 and later.

Be aware of the fact that 24Bit sound can not be recorded by the actual versions of the SoundManager, so this is mainly useful to preserve high quality even if you apply many effects.

### 3.4 The “Effects” menu.

**“Echo...”**. Allows to apply an echo to the current selection. If you check the “Go further” box and put a value of  $s$  seconds in the text field, the echo of the selection will be prolonged by  $s$  seconds. Nevertheless, *no* echo will be applied to the  $s$  seconds following the selection.

**“Amplify...”**. Allows to amplify the selection by a given factor. If the “fading time” is non-zero, a smooth transition is made between the amplified and the non-amplified sound.

**“Filter...”**. Allows to apply a frequency filter to the current selection. This item is similar to the graphic equalizer of a hifi chain.

**“Reduce background”**. Allows to reduce the background noise of a sound. Do not expect miracles from this function, lost information can simply not be restored! Nevertheless, it works quite fine sometimes, especially if the sound is not too complicated, for example only a voice speaking. In order to get optimal results, you’ll probably have to play around with the “Expert...” function.

The remainder of the **Effects** menu shows the external filters detected by **Amadeus II**. For the moment being, the standard release of **Amadeus II** contains three filters.

**“Interpolate...”**. This effect allows to suppress a crack in a sound. In order to achieve this, first search for the crack. This can be done for example with the help of the **Jump to play position** function. Then select the crack and a very short piece of sound before and after it. Make the selection as short as possible! Then you can apply the filter. Try different settings to get optimal results.

**“Reverse”**. This effect simply makes a time-reversal of the selected sound.

**“Simple generators”**. This effect allows to generate simple sounds like sine waves, silence or white noise.

### 3.5 The “Analyze” menu.

**“Spectrum”**. Makes a spectral analysis of the selected sound and stores the result in a Spectrum window.

**“Sonogram”**. Creates a sonogram from the current selection.

**“Real-time spectrum”**. Opens a window which shows a real-time spectral analysis of the sound entering into the current sound input device. There are many options to affect the display of the spectrum. The “preemphasis” option allows to amplify artificially the high frequencies.

This function seems to me a great pedagogical tool to show how a note is composed of a fundamental frequency and its harmonics for example.

**“Oscilloscope”**. Opens a window that shows in real-time the sound entering into the current sound input device.

## 4 Registering

Registering **Amadeus II** enables the file saving functions. Moreover, you will be put in a mailing list that keeps you informed about every new version. If you want to be removed from that mailing list, just tell me at `Martin.Hairer@math.unige.ch`.

The registration fee for **Amadeus II** is 25\$ US, to be paid to Kagi, *not to me directly* (It costs me about 7\$ to cash a cheque). Kagi will provide you with a serial code, which has to be entered in the **Registration...** dialog of the Apple menu. For more information about registering, see the “Read Me (Register)” file in the “Register” folder.