BYZANTINE MUSIC ASSISTANT ©

user manual

v1.0

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Byzantine Music Assistant

This application is intended to be an assistant for the byzantine chanter whether it be beginner or experienced chanter.

it allows the chanter to:

- Play ***notes*** and ***scales*** according to the correct intervals as set by the patriarchal music committee in 1881
- Apply ***fthora*** to ***notes*** and see how this affects ***scale***, ***intervals***, ***martyrias***…
- Experiment with ***intervals,*** manually change each ***interval*** up/down and check how this effects notes pitches.
- Check the correct ***martyrias*** of each ***note*** and how it is affected by ***fthoras*** and ***genres***
- check the ***equivalent transposed note*** of a ***note*** in case of mode variation (i.e. applying ***fthora*** on a ***note*** different than its typical note)
- apply 8 ***preset modes*** (8 standard byzantine music modes)

the chanter may also use this assistant as a reference for scales, martyrias, fthoras…

How to use it

the application is initially set to ***diatonic scale***.

if you are reading a piece with ***diatonic scale*** you are good to go, start playing ***notes*** by *clicking* on a ***note*** or *pressing* the ***keyboard key*** assigned to it. *(pages 5-6)*

if you find the piece high or low for your voice range then use ***transpose*** to change it to a suitable pitch for your voice. *(page 11)*

if you are reading a piece with a ***scale*** different than ***diatonic scale***, or in the middle of a piece you encounter a ***fthora***, you apply this ***fthora.*** *(pages 9-10)*

if you encounter an ifisis or diesis (flat or sharp) than use SHIFT and ALT keys to alter ***notes***. *(page 6)*

if a musical piece follows one of the eight standard modes apply this mode directly by using ***mode presets.*** *(page 12)*

This application offers lot of possibilities, experiment with fthoras, intervals and scales and you will have better understanding how all those work together and affect the music notes.

Enjoy!

Note Names

this application uses Romanized note names as follows:

Ni Pa Vou Gha Dhi Ke Zo

equivalent to Greek note names

Νη Πα Βου Γα Δι Κε Ζω

(‘) is added to note names (Ni’…) above the normal octave

(-1) is added to note names (Ke-1…) below the normal octave

Intervals

Byzantine Music is based on 72-TET, therfore intervals in this application are also based on 72-TET.

The smallest interval in byzantine music is called coma (or moria),

- one octave is 72 comas = 1200 cents
- major tone is 12 comas = 200 cents
- semi-tone is 6 comas = 100 cents
- quarter-tone is 3 comas = 50 cents (oriental music)

and more generally, 1 coma = 1200/72 = 16.67 cents

Base Note & Intervals

Byzantine Music is relative i.e. each note is dependent from the note that precedes it in the flow of music.

This application uses the same approach and, In order to achieve this, it uses what is called ***base note***.

Base Note is where a ***fhtora*** is applied. It has fixed pitch (frequency) during a musical phrase (or even entire piece).

When intervals are changed, ***base note*** *pitch (frequency) is not affected, all remaining notes pitches are changed accordingly based on their interval distance from this* ***base note****.*

Base note is changed when a ***fthora*** is applied to a new note which will become the new ***base note*** and so on.

Concepts and Conventions used in this application

General Overview

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Intervals (p.7-8)

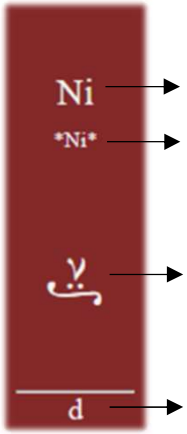
Play notes (p.5-6)

Intervals (p.7-8)

Fthora (p.9-10)

Preset Modes (p.12)

Play Notes



Normal Note *(white font color)*

Note Name *(‘ denotes higher octave and -1 denotes lower octave)*

Transposed Note Name
(depends on whether the martyria used is assigned on its “typical” note or not)

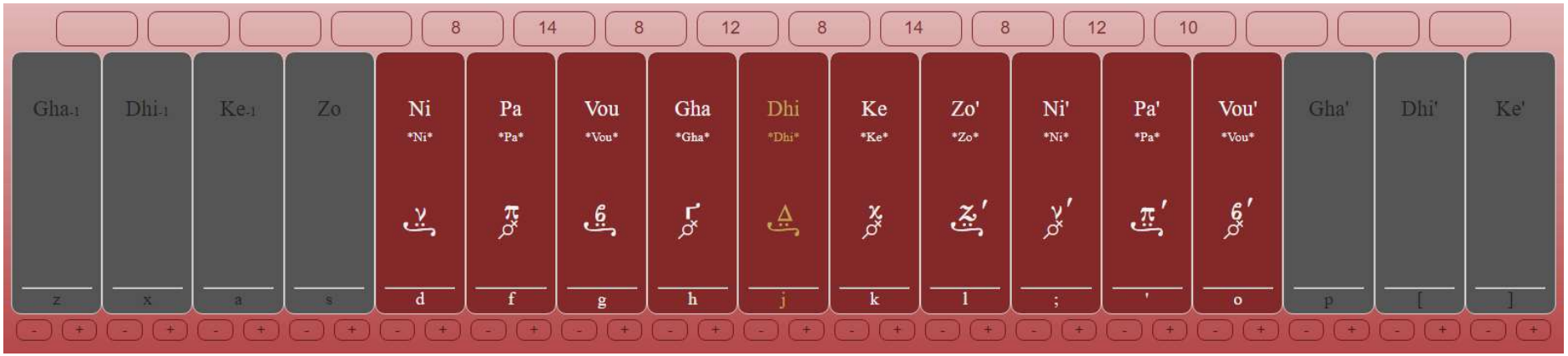
Martyria *(consists of 2 parts:*
fixed part: does not change and it denotes note name
variable part: changes with scale and fthora)

Keyboard key *(pressing this key will play the note)*

Normal Note
(white font color)

Base Note
(golden font color)

Deactivated Note
(greyed background)



Play Notes

to play a note,

*Click on it OR press the **keyboard key** assigned to it*

to play a raised note,

hold SHIFT (on Mac, Shift ⇧*) while playing the note*

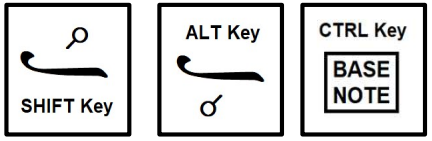
to play a lowered note,

hold ALT (on Mac, Option ⌥*) while playing the note*

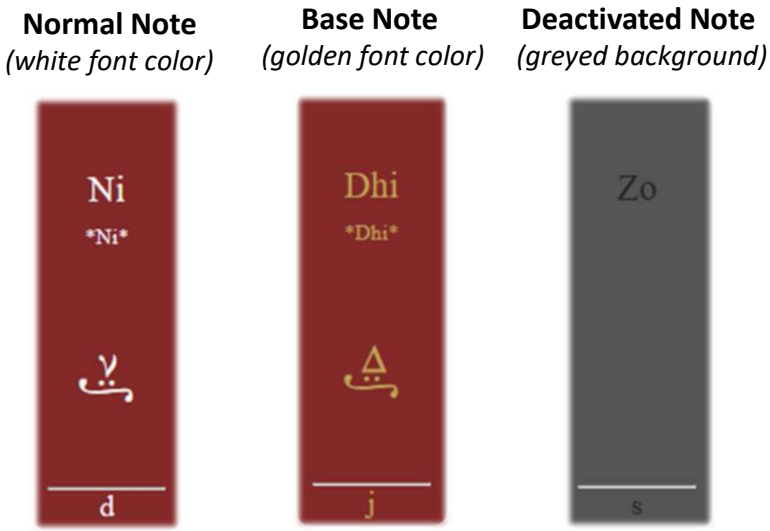
to set a note as ***base note***,

hold CTRL (on Mac, Control ^*) while playing the note*

when a modifier key (i.e. SHIFT, ALT or CTRL) is held when ***note** is played*, it is visually indicated by highlighting the corresponding image.



how much a note is lowered or raised is automatically calculated



there are 3 types of note keys: ***normal note***, ***base note*** and ***deactivated note***.

base note is where ***fthora*** is applied

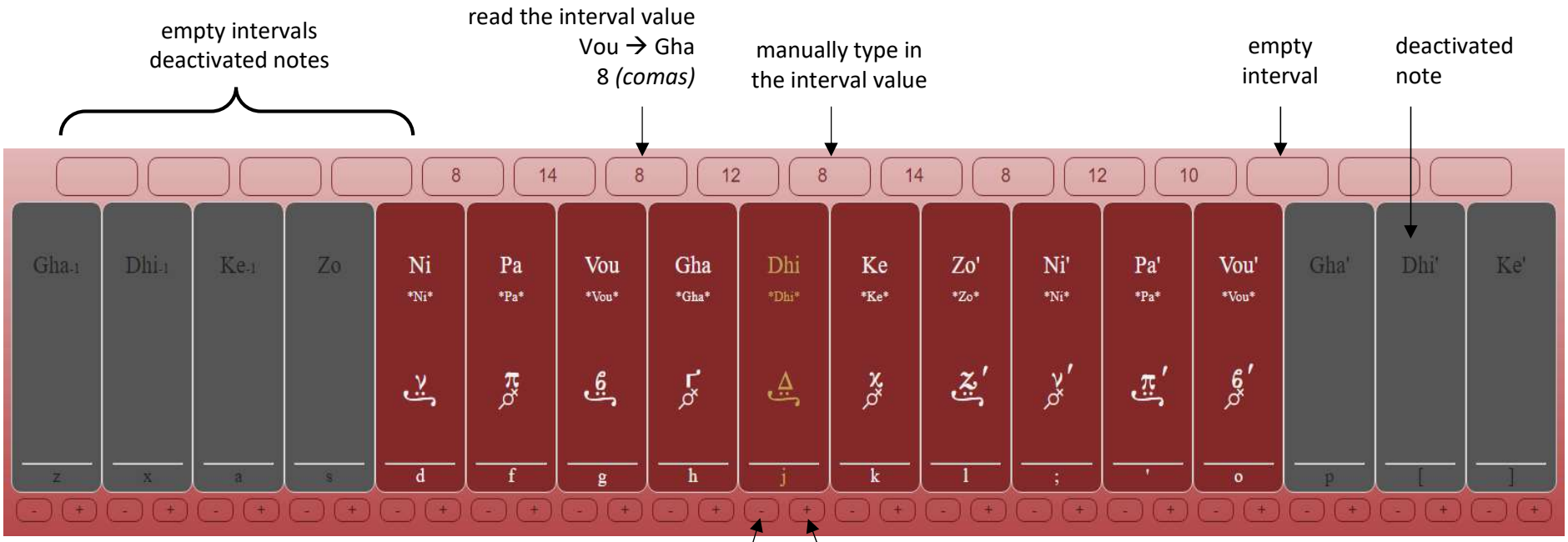
deactivated note is found when an ***interval*** is empty.

deactivated notes DO NOT produce sound!

you can re-activate a ***de-activated note*** by changing the ***interval*** to become non empty!

deactivated note can be set as ***base note***

Intervals


empty intervals
deactivated notes
read the interval value
Vou → Gha
8 (comas)
manually type in
the interval value
empty
interval
deactivated
note
8 14 8 12 8 14 8 12 10
Gha-1 Dhi-1 Ke-1 Zo Ni Pa Vou Gha Dhi Ke Zo' Ni' Pa' Vou' Gha' Dhi' Ke'
Ni *Pa* *Vou* *Gha* *Dhi* *Ke* *Zo* *Ni* *Pa* *Vou*
z x a s d f g h j k l ; ' o p [ ]
press - button to lower a note
(this will decrease the interval before the note by one coma and increase the interval after it by one coma)
press + button to raise a note
(this will increase the interval before the note by 1 coma and decrease the interval after it by 1 coma)

Intervals

intervals set the distance measured in ***coma*** *(or moria)* between adjacent notes. for instance, in the image on the previous page we can see that:

Vou → Gha is 8 comas

Gha → Dhi is 12 comas

Dhi → Ke is 8 comas, ….

blank intervals lead to ***deactivated notes*** i.e. notes that cannot play sound because they are not defined!

accepted range: ***0 ≤ interval ≤ 72***

intervals are automatically updated each time you:

- change the ***base note,***
- apply a new ***fthora***,
- use a ***preset setting***,
- press the ***Reset Scale*** button

to change an interval,

enter value directly

OR,

press + button to raise a note: *this will increase the interval before the note and decrease the interval after it*

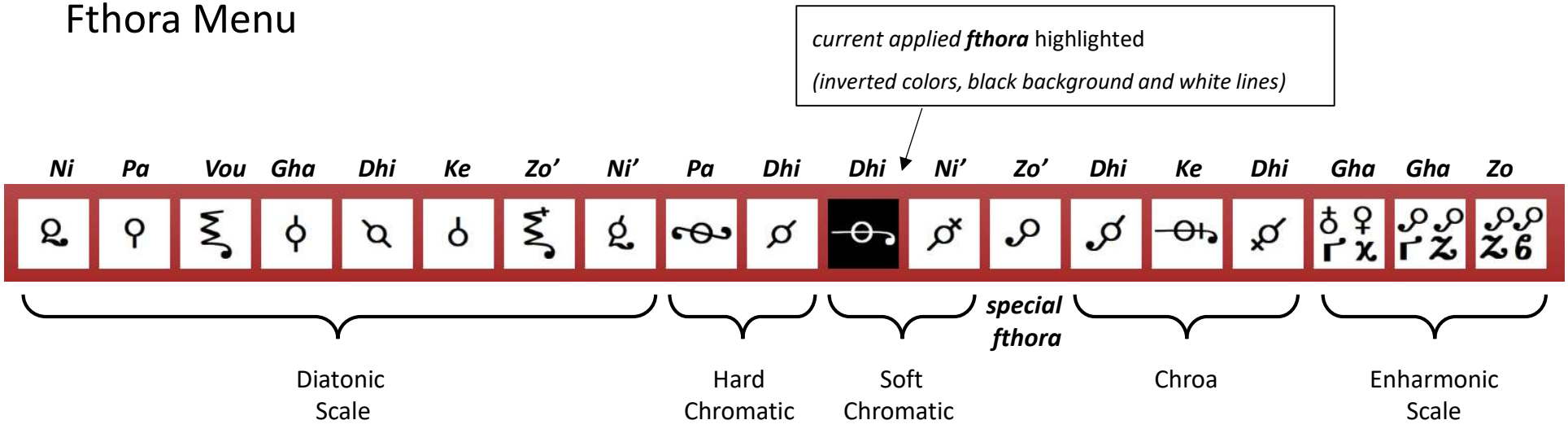
OR,

press - button to lower a note: *this will decrease the interval before the note and increase the interval after it*

Note: ***base note*** pitch (frequency) is fixed, so when intervals are changed, ***base note*** is unchanged, all remaining notes are changed accordingly.

to fine tune base note, use the fine tuning base note options.

Fthora Menu



fthora menu is used to apply a ***fthora*** to a ***base note.***

*for instance, t*o apply ***fthora Dhi*** of soft chromatic scale on ***Gha***,

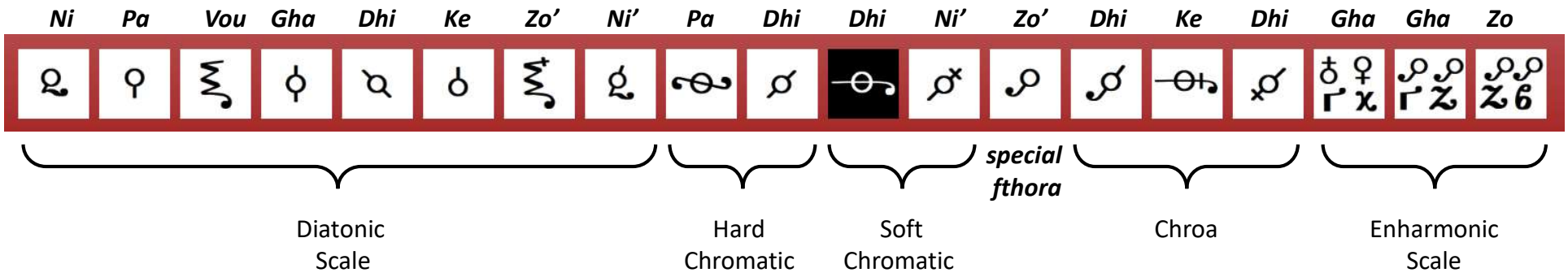
- set ***Gha*** as ***base note*** (hold CTRL and *click* Gha)
- *click* on the required ***fthora Dhi*** of soft chromatic scale

note that order is not important! *clicking* the ***fthora*** then setting the ***base note*** will give the same result.

fthora of ***chromatic scales*** do not affect notes beyond one octave
also, ***Chroa**** affect few notes only
notes not affected become ***deactivated notes*** and do not play sound!

* ***Chroa*** in byzantine music are not ***fthoras*** but for the purpose of this application are considered as ***fthora.***

Fthora Menu



Theoretically, ***Enharmonic scales*** do not have dedicated ***fthoras*** and are usually defined by:

one general flat + one general sharp

OR,

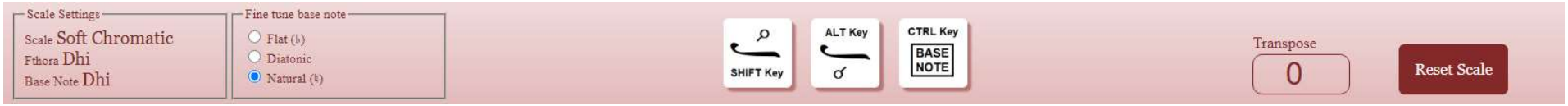
using the "special fthora" two times (i.e. on two different notes)

Enharmonic scale on ***Gha***
using general sharp on ***Gha*** and general flat on ***Ke***
in this application, the martyrias in this scale are same as diatonic

Enharmonic scale on ***Gha*** (called in this application **Enharmonic *Gha 2***)
using '***special fthora***' on ***Gha*** and ***Zo***
different martyrias are used for this scale

Enharmonic scale on ***Zo***
using '***special fthora***' on ***Zo*** and ***Vou***

Header



Scale Settings

- *Displays the current **scale**, selected **fthora** and the **base note.***
- note that, ***fthora*** is always applied to ***base note***

Fine tune base note

- this option allows to alter the ***base note***.
- the most suitable option is automatically chosen, but can be changed manually. this allows to experiment different scenarios.
  - *natural* sets the base note frequency to that of a white key of a piano
  - *flat* lowers the base note frequency 6 comas relative to the white key of a piano
  - *diatonic* lowers the base note frequency 2 comas relative to the white key of a piano

SHIFT, ALT and CTRL key icons

- those icons provide a visual feedback when SHIFT, ALT or CTRL keys are pressed with a note
- also they help remembering roles of each key
  - SHIFT key to LOWER a note
  - ALT key to RAISE a note
  - CTRL key to set note as the ***base note***

Transpose

- raise or lower all notes pitches by a specific value set in ***semi-tones*** (1 semi-tone = 6 comas = 100 cents)
- accepted range: **-12 to +12** (12 semi-tones → octave)

Reset Scale

- resets all intervals to the current ***scale***, ***fthora*** and ***base note***
- it is useful when intervals where manually changed and one whishes to revert back and undo changes

Preset Modes

Preset modes represent the traditional byzantine music modes.

mode 1: Diatonic, ***base note*** Pa
mode 2: Soft Chromatic, ***base note*** Dhi
mode 3: Enharmonic, ***base note*** Gha
mode 4: Diatonic, ***base note*** Vou (Leyetos)
mode 5 (plagal 1): Diatonic, ***base note*** Ke
mode 6 (plagal 2): Hard Chromatic, ***base note*** Pa
mode 7 (plagal 3): Enharmonic, ***base note*** Gha
mode 8 (plagal 4): Diatonic, ***base note*** Ni

To select a ***Preset Mode***,

click on the button of the desired mode

A ***preset mode*** defines ***base note*** and applies proper ***fthora*** to it

About

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Developed by Charles E. Berbery 2021 ©

"EZ" font package from Saint Anthony Monastery was used for music notation

https://music.stanthonysmonastery.org/ByzMusicFonts.html