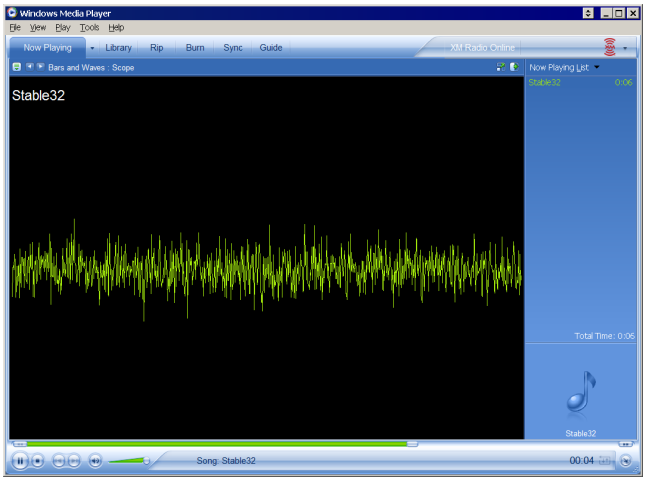
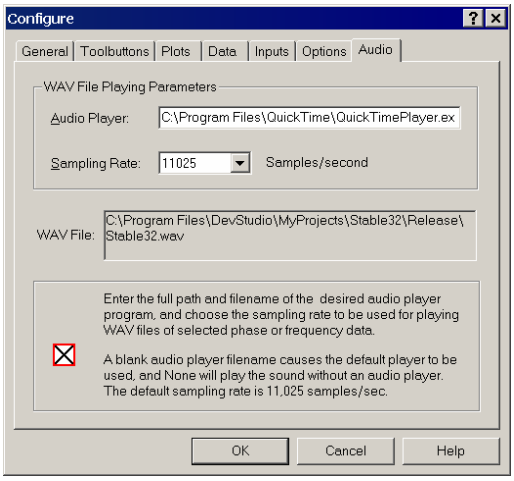
Stable32 Version 1.52 User Manual Addendum

• Audio Function

Stable32 Version 1.52 includes an Audio function that allows listening to phase and frequency noise data as a .WAV file on the computer sound system.. This sound file may be played on the default audio player (e.g., Windows Media Player), another specified audio player (e.g. Quick Time Player), or directly without a separate audio player program. The sampling rate of the WAV file may be set to one of five standard values between 8 kHz and 44.1 kHz, and has no relationship to the sampling period (tau) of the phase or frequency data. The data is stored with 16-bit CD quality having a nominal 96 dB dynamic range. The audio player and sampling rate are set on the Audio page of the Configure property sheet.



White FM frequency noise data displayed in Windows Media Player



Audio page of the Configure property sheet

While of little analytical use, this does provide another way to experience various noise types. It works best with long data files (several tens of thousands of points), and with headphones or a sound system having good bass response. The more divergent noise types are best observed at the highest sampling rate. White PM frequency noise, at the "blue" end of the audio spectrum, sounds like frying bacon. White FM frequency noise sounds like the "white" noise from a radio. Random walk FM frequency noise, toward the "red" end, has a low rumbling sound. And random walk FM phase noise, in the "infrared" region, cannot be heard at these sampling rates. Some media players have oscilloscope, spectrum analyzer, and other visualizations that can add another dimension to noise observations.

• Function Keys

Additional function key commands were added to the Stable32 user interface. Besides the standard F1 Help command, the F2-F12 function keys now provide another way to execute common commands, and the Shift F1 key provides immediate access to the Stable32 User Manual.

Key	F1	F2	F3	F4		F5	F6	F7	F8		F9	F10	F11	F12
Normal	Help	File #1	File #2	File #3		Conv	Edit	Plot	Stats		Run	Power	ACF	Select
Shift	Manual													

The F2-F4 keys reopen previous phase or frequency data. The F5 key performs a phase-frequency conversion from the current data type, which can be selected with the F12 key. The F6 and F8 keys open the Edit or Statistics dialogs. The F7, F9, F10, and F11 keys execute the Plot, Run, Power and Autocorrelation functions, producing their respective plots with a single keystroke.

• Polynomial and Function Fits

Polynomial (up to 9th order) and general non-linear function fits were added to the phase and frequency data plot options.

• Miscellaneous Changes

1. An edit control was added to the General page of the Configure property sheet to allow setting the printer font point size.
2. A new much faster method was implemented for the ThêoBR bias calculation.
3. Several improvements were made to the Power function, including normalization of the data before PSD calculations, optional zero padding via a checkbox on the Options page of the Configure property sheet, and display of the effective noise bandwidth.
4. Improvements were made to the Database file reading function.
5. Several minor user interface changes were made.

See the Stable32 Help file for more information about all of these new features.

W.J. Riley
Hamilton Technical Services
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