

NEW UNIQUE TECHNIQUE TO MEASURE SIGNAL DEGRADATION

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(Part III)

To explain more about what type of distortions are well audible and why another one, even strong, are inaudible let's look at a well known article "Re great debate: Subjective evaluation" [5]. In the test described in this article crossover distortion of different levels were especially added to signal by two diodes. It was found in audio tests on musical signals that the level of noticeability is ~1% !

So the level of distortion is quite high and any known signal test will decide that 1% THD amplifier is low-level design but two pass reverse test will be in agreement with LIPSHITZ, S.P. & VANDERKOOY, J.

Suppose the amplifier is strongly nonlinear like on Fig. 8.

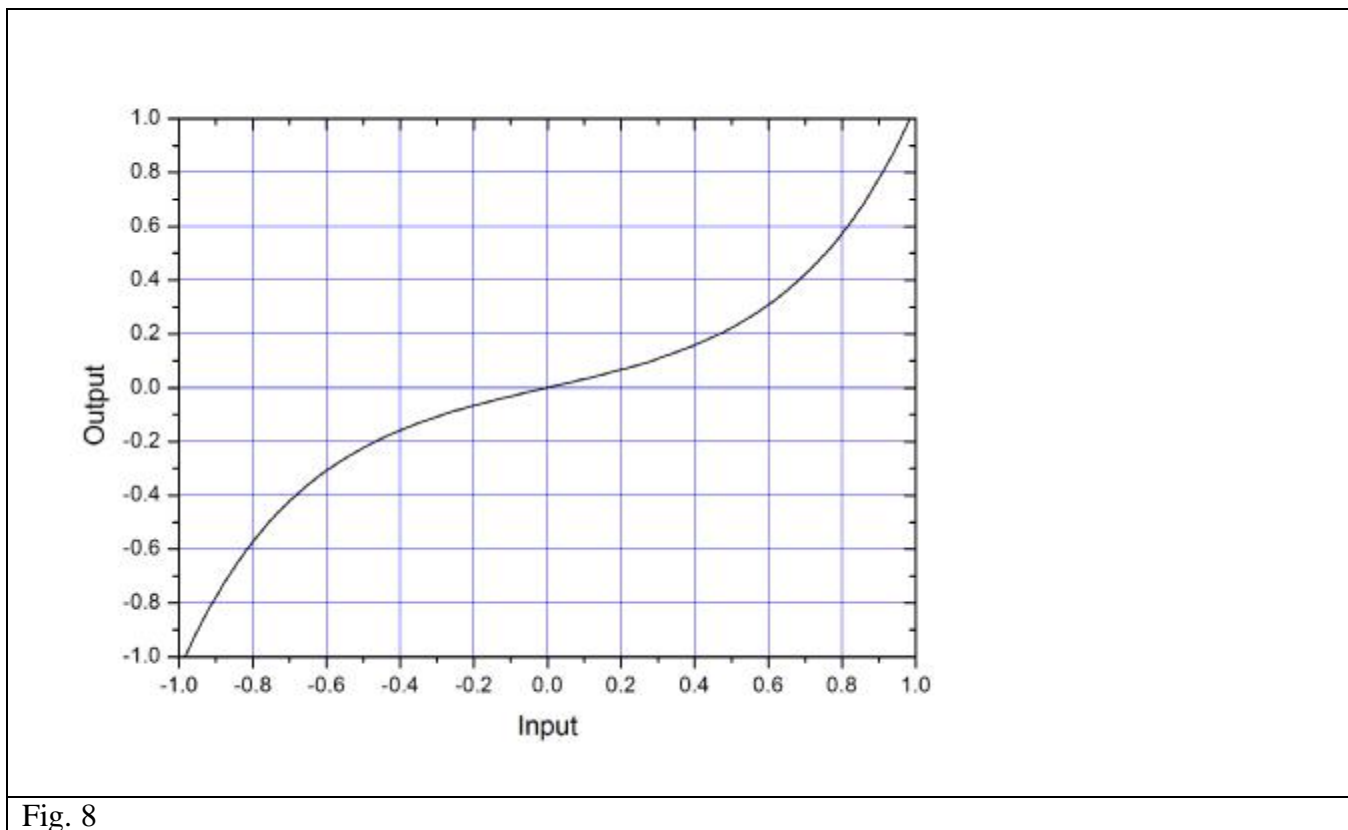


Fig. 8

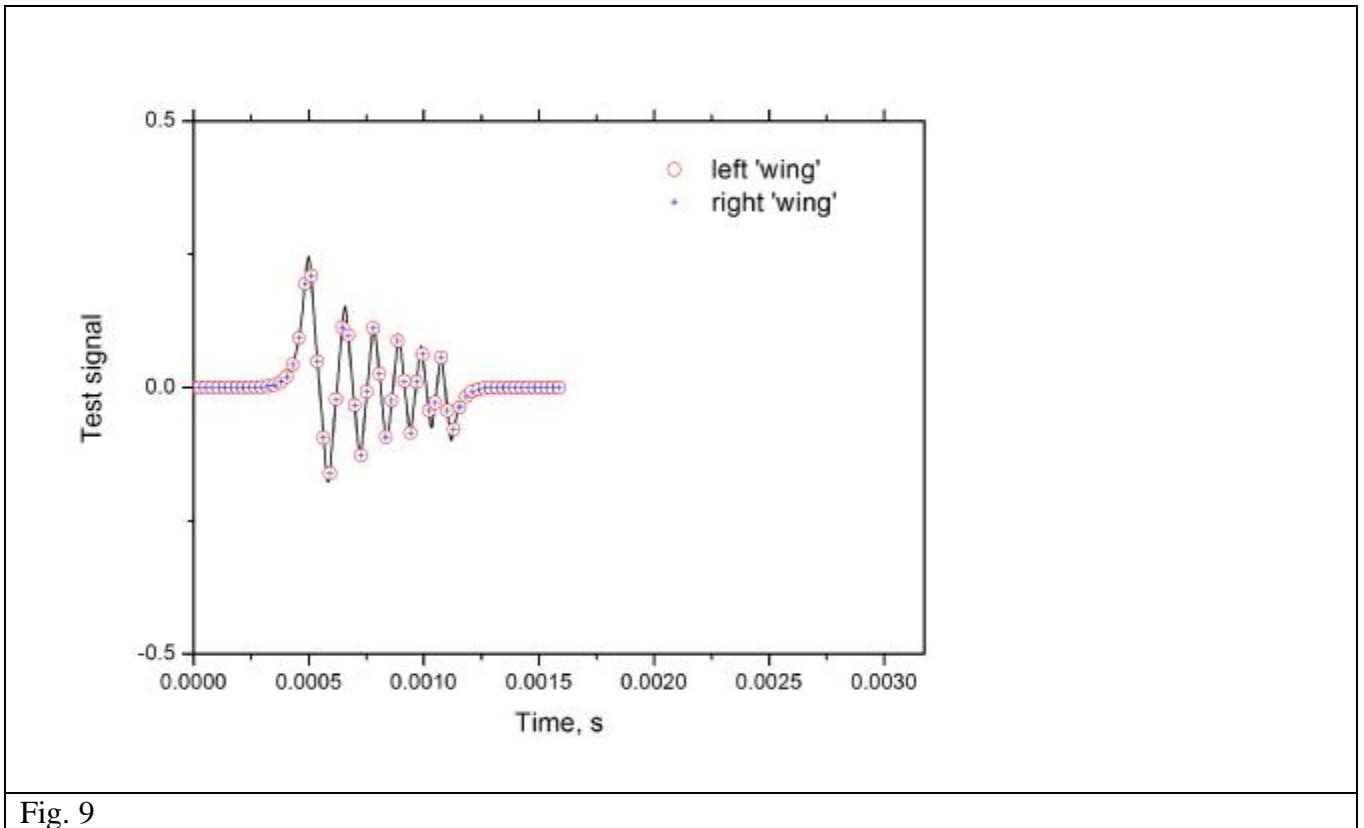
Signal going through an amplifier in a two-pass reverse test will be distorted twice by nonlinearity but the left 'wing' and right 'wing' will still be equal like it is shown on Fig. 9.

Nonlinear functions do not destroy the symmetry of the signal 'wings' and a two-pass reverse test will show zero distortion level. The same will be with soft clipping of the signal in an amplifier. The level of nonlinearity may be high but in a reasonable range.

But if the input/output function in a real amplifier exhibits variation due to the influence of the signal on the elements of the amplifier, then the signal symmetry will be destroyed and at the same time it is an indication of signal degradation, which is quite well noticeable even if the degradation is ~0.001%.

Low level of degradation is not even covered by the 1% of nonlinearity or common linear distortions in C, L, R circuits.

The result for capacitor in Part II was to show the ability of capacitors to degrade signals and also it shows why hearing is so sensitive to the quality of capacitors.



(More about and some application results will be later)

Literature (preliminary):

[5] -- LIPSHITZ, S.P. & VANDERKOOY, J. (1981) "Re great debate: Subjective evaluation", JAES, 29, 7/8, Pp.482-490.