

Title (en)  
AUDIO SIGNAL PROCESSING METHOD AND DEVICE

Title (de)  
VERFAHREN UND VORRICHTUNG ZUR VERARBEITUNG VON TONSIGNALEN

Title (fr)  
PROCÉDÉ ET DISPOSITIF DE TRAITEMENT DE SIGNAL AUDIO

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Application  
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Abstract (en)  
[origin: CN113424557A] The present invention relates to a method and device/apparatus for an audio signal processing in an audio chain, the method and apparatus that correct a non-linearity of electroacoustic transducers in the audio chain taking into consideration also a non-linear psychoacoustical characteristics of the human ear by adding non-linearities in the audio chain in a controlled manner, in order to obtain a better acoustic image and more details when reproducing a sound by using approximation of the quadratic and a fifth degree polynomial function in some range. According to the present invention, the method comprises approximating by a non-linear fifth degree polynomial function of the psychoacoustical characteristics of the human ear and adding of at least one non-linear element (4) in front of at least one electroacoustic transducer in the audio chain, whereby the non-linear element (4) has a function to add a non-linearity in the audio chain that corrects the non-linearity of at least one electroacoustic transducer and/or the non-linearity of the approximated psychoacoustical characteristic of the human ear for a pressure change by the human ear up to  $\rho \Delta$ . An audio signal processing apparatus (19) of the present invention comprises at least one non-linear element (4) in an audio chain that has the function of adding non-linearity to an audio chain that corrects the non linearity of at least one electroacoustic transducer and/or the non-linearity of the approximate psychoacoustical characteristic of the human ear for the pressure change by the human ear to  $\rho \Delta$ . The present method and the apparatus (19) reduce limitations of the electroacoustic transducers as well as the human ear by adding non-linearities that, ultimately reduce non-linearities of the entire audio chain with the human ear, i.e. adding non-linearities in the audio chain so that an audio chain characteristic reduces the non-linearity of the human ear polynomial approximation to the pressure change  $\rho \Delta = \pm 1$  Pa.

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