

عنوان مقاله:

Ultra Low Power and Wide Tuning Range Phase Shift Use of CMOS Varactor Technique In Human Auditory System

محل انتشار:

سومین کنفرانس ملی فناوریهای نوین در مهندسی برق و کامپیوتر (سال: 1398)

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خلاصه مقاله:

In the past decades, there has been extensive research to better understand the human hearing system in different fields. In this paper, the human auditory system is implemented using CMOS Varactors Technique that the most important advantages of this circuit is ultra low power consumption and wide tuning range phase. The proposed circuit uses a one of MOS varactor models called inversion-mode (I-MOS) structure. Tuning of Phase Shift circuit has been achieved with the resistance variation of NMOS transistor and capacitance variations of CMOS varactor. The proposed circuit consists of a capacitive block consisting of two blocks The I-MOS varactor is of type N and P are parallel. Each of the n and p blocks contains several parallel transistors, which increases the range of phase difference created and generate phase difference and amplitude changes. The simulation was performed using HSPICE software at 90 nm technology. This circuit is simulated with 1.2 V power supply, 1 kHz input signal frequency, variation of VGS from 0.3 to 1.2 V and variation of parameters such as M from 1 to 100 , W and L. By comparing these five types of variation, we conclude that the variation of the PMOS capacitive block has the greatest range of phase and amplitude differences. The proposed circuit generates a wide tuning range phase difference of 1 to 180 .degrees, range of amplitude is 2 to 20 mv and power consumption 407.24 nw

کلمات کلیدی:

Human auditory system, Sound Source Localization, CMOS Varactor, I-MOS Varactor, Phase Shift in Human ear, Low Power

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