



## Maximizing Audio Quality with Multi-rate Audio-Integrated Systems

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### Description

Multi-rate audio-integrated systems are used to process digital audio signals at different sampling rates. These systems allow for the efficient transmission of audio signals over a network by minimizing the amount of data that needs to be transmitted.

The primary advantage of multi-rate audio integrated systems is the ability to process audio signals at different sampling rates. Audio signals are typically sampled at a fixed rate, which can lead to large amounts of data being transmitted over a network. However, by processing audio signals at different sampling rates, multi-rate systems can reduce the amount of data that needs to be transmitted without sacrificing audio quality. This is particularly useful in applications where bandwidth is limited, such as internet radio or streaming services.

"Multi-rate Audio-Integrated Feedback Active Noise Control (AFANC) systems using decimated-band adaptive filters for reducing narrowband noises" - This research paper explores the use of multi-rate Audio-Integrated Feedback Active Noise Control (AFANC) systems for reducing narrowband noises in audio signals. It discusses the advantages of using multi-rate techniques in AFANC systems, including improved efficiency and reduced computational complexity [1].

"Audio-Integrated Feedback Active Noise Control (AFANC) systems deliver wideband audio signals and cancel low frequency narrowband noises simultaneously" - This article explains how (AFANC) systems work to cancel out unwanted noise in audio signals.

It discusses the advantages of using multi-rate techniques in AFANC systems to improve audio quality and reduce computational complexity [2].

Multi-rate systems can also improve the quality of audio signals by using oversampling. Oversampling is the process of sampling an audio signal at a higher rate than the original signal. This can improve the accuracy of the digital signal by reducing the effects of quantization noise. Multi-rate systems can use oversampling to improve the quality of audio signals without increasing the amount of data that needs to be transmitted.

Multi-rate systems are widely used in the audio industry for a variety of applications. One common application is in Digital Audio Workstations (DAWs). DAWs are used to record, edit, and mix audio tracks. Multi-rate systems are used in DAWs to allow for the efficient processing of audio signals at different sampling rates. This is particularly useful in applications where multiple audio tracks are being processed simultaneously, such as in a music production studio.

Another application of multi-rate systems in the audio industry is in Digital Signal Processors (DSPs). DSPs are used to process the audio signals in real-time, such as in a guitar effects pedal. Multi-rate systems are used in DSPs to allow for the efficient processing of audio signals at different sampling rates. This is particularly useful in applications where low latency is important, such as in live performances.

### Conclusion

In conclusion, multi-rate audio-integrated systems are a powerful tool in the audio industry. They allow for the efficient processing of audio signals at different sampling rates, which can reduce the amount of data that needs to be transmitted without sacrificing audio quality. Multi-rate systems are widely used in applications such as digital audio workstations and digital signal processors. As the demand for high-quality audio continues to grow, multi-rate systems will become increasingly important in the audio industry.

### References

1. Siswanto A, Chang CY, Kuo SM (2020) Multirate audio-integrated feedback active noise control systems using decimated-band adaptive filters for reducing narrowband noises. *Sensors* 20(22):6693.
2. Gan WS, Kuo SM (2002) An integrated audio and active noise control headset. *IEEE Trans Consum* 48(2):242-247.