# Unequal error protection of digitized analog data for wireless networked control systems

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**Abstract:**

In wireless networked control systems very often digitized analog data have to be transmitted via noisy radio links. The information bits at the output of an analog-to-digital converter exhibit very different significance. In case of errors of the transmitted information bits, the noise contribution after digital-to-analog conversion at the receiver is much stronger for the most significant bit than for the less significant bits. More precisely, the mean-square error depends exponentially on the bit position. Because of this property, the transmission quality can be improved by using an unequal error coding technique. Several classes of unequal error coding techniques are known, but their parameters cannot be easily adapted to the problem of protecting very short messages of information bits (typically 8 to 16 bits). This paper presents a solution for this problem which is based on truncated convolutional codes.