Abstract

In this paper, we describe the trellis coding where quantum computing (QC) is employed to analyze the coding gain and complexity. According to quantum information theory, quantum bits
increase the storage capacity as well as speed. High complex trellis based on partial memory code (PUM) is designed and simulated in digital computers. In order to reduce simulation time for trellis decoding, QC is analyzed with PUM coding. From the theoretical analysis, QC in a quantum computer will be the best option because quantum bits can be stored simultaneously in a given moment of time. From this theory, trellis states, paths, metric calculations are stored in lesser time and space than conventional storing procedures. Therefore, QC certainly will improve the trellis coder performance.

Reference

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- Vijey Thayananthan, Garik Markarian, and Bahram Honary, “DSP Implementation and Design of Trellis Coded Quantisation Technique Based on Partial Unit Memory Codes”, IEEE GLOBECOM 98, 8 12 November 1998.

Index Terms
Key words

Trellis coding  QC  complexity
PUM coding
information theory