Review of: "A Generalized Space-Efficient Algorithm for Quantum Bit String Comparators"

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Potential competing interests: No potential competing interests to declare.

The paper titled "A Generalized Space-Efficient Algorithm for Quantum Bit String Comparators" presents a novel approach to designing quantum comparators for comparing two n-qubit logic states using only two ancillary bits. Here are my comments:

The related work section provides a comprehensive review of existing quantum comparators, including both serial-based and tree-based approaches. However, the presentation could be improved by providing a more critical analysis of the strengths and weaknesses of each approach and how they compares to the proposed method.

The use of figures and equations enhances understanding, but some figures (e.g., Figures 12-15) could be clearer with better labeling and annotations.

The interpretation of the results could be more concise, and some sections (e.g., Table 2) contain redundant information.

The paper demonstrates a high level of technical depth, providing detailed descriptions of quantum gates, circuit designs, and mathematical formulations. This may be challenging for readers with limited background knowledge in quantum computing, but it is appropriate for the target audience of researchers and experts in the field.