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I am submitting an article titled "Halving the cost of quantum addition" for publication in Nature Quantum Information.

The article introduces a construction that can compute and later uncompute the quantum equivalent of a logical AND gate using a total of four T gates, and uses this construction to improve the T-count of several quantum circuits. T gates are the most significant cost of surface-code-based error corrected quantum computation, and opportunities to use the logical AND are quite common, so this represents a large reduction in the projected costs of quantum computing.

I believe that this article is appropriate for publication by Nature Quantum Information. The article represents original research. It fails within [the journal's scope](). It is a significant result. It has not been published and is not under consideration for publication elsewhere (though a preprint [has been listed on the arXiv [1709.06648]]()).

Thank you for your consideration,

Craig Gidney