Genuine Quantum SudoQ

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We expand quantum variant of the popular game Sudoku by considering
the genuine quantum solutions – the ones that cannot be reduced to classical
counterparts by a unitary operation. We also introduce the notion of cardinal-
ity, namely the number of distinct vectors of the solution. Our main results
are establishing the admissible cardinalities and finding the parametrization
of the 4x4 case. Finally we explored a family of genuine quantum solutions of
9x9 SudoQ, which contains grids of maximal cardinality.

[1] I. Nechita and Jordi Pillet "SudoQ – a quantum variant of the popular
    game." *arXiv: Quantum Physics* (2020)

[2] Benjamin Musto and Jamie Vicary "Quantum Latin squares and unitary
    error bases" *arXiv* (2016)