# Quantum Logic Programming in Prolog

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The advantages of quantum computing can produce relevant advances in many application fields, and the development of increasingly powerful hardware platforms is enabling wider adoption of quantum solutions in real-world tasks. However, a significant limitation to applying the quantum paradigm to real problems is the difficulty in designing solutions using quantum computational blocks. We illustrate an innovative approach that allows for the description of a solution using a high- level language, which can be translated into a set of appropriate quantum gates to perform the desired computation. We present a system based on quantum computational logic proposed by Dalla Chiara et al. to represent a quantum computation within a Prolog environment. In this system, a logic formula is translated into a quantum-operable formulation, following the logic's holistic semantics. Preliminary examples illustrate the method's application.

## References

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