

## QUANTUM INFORMATICS: ALGORITHMS AND LANGUAGES

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Quantum Informatics is a new research area which deals with traditional notions of classical informatics in the situation that the carrier of information is a physical system with genuine quantum properties. Shor's algorithm for efficiently factorizing large integers is still the most prominent among many other algorithms, which have been found so far. After a brief discussion of some physical preliminaries, this algorithm will be presented in some detail. Formulating algorithms requires some sort of notation. Pseudo-code and conventional mathematical notations are suitable for persons but, in general, not sufficiently concise for the use by automata (compiler). Therefore, quantum programming languages (QPLs) have been designed, which support the development of quantum algorithms and quantum programs. In combination with a classical simulator they can be used to run quantum programs on a conventional PC, although usually not efficiently. The talk concludes with a brief survey on QPLs in general and a detailed discussion of a specific example.

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