QPL 2005

Proceedings of the 3rd International Workshop on Quantum Programming Languages

(Preliminary Version)

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Peter Selinger, Editor

Preface

This volume contains the proceedings of the 3rd International Workshop on Quantum Programming Languages (QPL 2005), which will be held June 30–July 1, 2005 in Chicago. The workshop is held as an affiliated event of the Twentieth Annual IEEE Symposium on Logic in Computer Science (LICS 2005).

The purpose of this workshop series is to bring together researchers working on mathematical foundations and programming languages for quantum computing. In the last few years, there has been a growing interest in logical tools, languages, and semantic methods for analyzing quantum computation. These foundational approaches complement the more mainstream research in quantum computation which emphasizes algorithms and complexity theory. Previous workshops in this series were held in Ottawa, Canada (2003) and Turku, Finland (2004). The following list of topics is typical of the scope of this workshop series, although not necessarily exhaustive:

- the design and semantics of quantum programming languages
- new paradigms for quantum programming
- specification of quantum algorithms
- higher-order quantum computation
- quantum data types
- reversible computation
- axiomatic approaches to quantum computation
- abstract models for quantum computation
- properties of quantum computing resources and primitives
- concurrent and distributed quantum computation
- compilation of quantum programs
- semantically methods in quantum information theory
- categorical models for quantum computation

The workshop program consists of an invited lecture by Hans J. Briegel (Innsbruck), as well as ten contributed papers. The contributed papers were selected by a program committee consisting of Bob Coecke (Oxford), Simon Gay (Glasgow), Philippe Jorrand (Grenoble), and Peter Selinger (Ottawa).

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