Preface

This volume contains the proceedings of the 2nd International Workshop on Quantum Programming Languages (QPL'04), which will be held July 12–13, 2004 in Turku, Finland. The workshop is held as an affiliated event of the Nineteenth Annual IEEE Symposium on Logic in Computer Science (LICS 2004).

The purpose of this workshop series is to bring together researchers working on mathematical formalisms and programming languages for quantum computing. In the last few years, there has been a growing interest in logical tools, languages, and semantical methods for analyzing quantum computation. These foundational approaches complement the more mainstream research in quantum computation which emphasizes algorithms and complexity theory. The following list of topics is typical of the scope of this workshop, although not necessarily exhaustive:

- the syntax 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
- concurrent and distributed quantum computation
- compilation of quantum programs
- semantical methods in quantum information theory
- categorical models for quantum computation

The workshop program is comprised of an invited lecture by Richard Jozsa (Bristol), as well as eleven contributed papers. The contributed papers were selected, based on submitted abstracts, by a program committee consisting of Samson Abramsky (Oxford), Prakash Panangaden (McGill), and Peter Selinger (Ottawa).