

Preface to the second edition

More than a decade has passed since we completed the first edition of the book. Much has happened during it. We have not tried to take all recent valuable contributions into account, but some of them can be found here. The Lieb conjecture for spin coherent states has been proved by Lieb and Solovej, and an important additivity conjecture for quantum channels has been disproved. Since these conjectures were discussed at some length in the first edition we felt we had to say more about them. However, our main concern with this second edition has been to improve explanations and to remove mistakes (while trying not to introduce new ones).

There are two new chapters: One of them is centred around the finite Weyl–Heisenberg group, and the discrete structures it gives rise to. The other tries to survey the vast field of multipartite entanglement, which was relegated to a footnote or two in the first edition. There are also a few new sections: They concern Gleason’s theorem and quantum contextuality, cross-sections and projections of the body of mixed quantum states, and the concentration of measure in high dimensions (which is needed to understand what is now Hastings’ non-additivity theorem).

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