Abstract

We introduce basic concepts related to quantum symmetries starting with matrices. We establish the quantum Perron-Frobenius theorem on quantum symmtries. We characterize the structure of the Perron-Frobenius eigenvector space using quantum Fourier analysis (in the sense of picture language). We generalize the existence and uniqueness results for the Perron-Frobenius eigenvector on Banach ordered spaces, from the finite dimensional case to infinite dimensions. We also describe the relation between these mathematical results and quantum information theory, especially to the Knill-Laflamme theorem.