

May 8, 2003

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Invariant theory and quantum computation

Quantum computation proposes to replace the familiar yes-no, on-off binary choices of standard logic with states in a two-dimensional quantum mechanical system having SU_2 symmetry, the so-called " q -bits". It a challenge to try to understand how systems combining several q -bits can behave. This talk will discuss approaches using invariant theory to describe states in systems composed of small numbers of q -bits.