

Quantum Physics

A family of asymptotically good quantum codes based on code concatenation

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(Submitted on 31 Dec 2008)

We explicitly construct an infinite family of asymptotically good concatenated quantum stabilizer codes where the outer code uses CSS-type quantum Reed-Solomon code and the inner code uses a set of special quantum codes. In the field of quantum error-correcting codes, this is the first time that a family of asymptotically good quantum codes is derived from bad codes. Its occurrence supplies a gap in quantum coding theory.

Comments: 10 pages

Subjects: **Quantum Physics (quant-ph)**; Information Theory (cs.IT)Cite as: **arXiv:0901.0042v1 [quant-ph]**

Submission history

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[v1] Wed, 31 Dec 2008 02:57:22 GMT (264kb)

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