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Dynamics of microcavity polaritons in the Markovian limit. (English) Zbl 1220.81212
Phys. Lett., A 372, No. 18, 3176-3183 (2008).

Summary: A master equation for the reduced density matrix of the microcavity polaritons coupled with the reservoir of high energy excitons is derived. It is allowed both the polaritons and the excitons to be self-interacting systems. Long time asymptotic properties of the polariton population is studied in the whole range of the reservoir temperatures and the corresponding decoherence effects are reported.

MSC:

[81V80](#) Quantum optics
[81S22](#) Open systems, reduced dynamics, master equations, decoherence
[82D20](#) Statistical mechanical studies of solids
[47D06](#) One-parameter semigroups and linear evolution equations
[82B30](#) Statistical thermodynamics

Cited in **2** Documents

Keywords:

[quantum dynamical semigroups](#); [quantum optics](#); [decoherence](#); [equilibrium states](#)

Full Text: [DOI](#)

References:

- [1] Khitrova, G.; Gibbs, H.M.; Jahnke, F.; Kira, M.; Koch, S.W., Rev. mod. phys., 71, 1591, (1999)
- [2] Weisbuch, C.; Nishioka, M.; Ishikawa, A.; Arakawa, Y., Phys. rev. lett., 69, 3314, (1992)
- [3] Porras, D.; Ciuti, C.; Baumberg, J.J.; Tejedor, C., Phys. rev. B, 66, 085304, (2002)
- [4] Alicki, R.; Lendi, K., Quantum dynamical semigroups and applications, (1987), Springer Berlin · [Zbl 0652.46055](#)
- [5] Porras, D.; Tejedor, C., Phys. rev. B, 67, 161310(R), (2003)
- [6] Kavokin, A.; Malpuech, G.; Laussy, F.P., Phys. lett. A, 306, 187, (2003)
- [7] Tassone, F.; Yamamoto, Y., Phys. rev. B, 59, 10830, (1999)
- [8] Alicki, R., Phys. rev. A, 40, 4077, (1989)
- [9] Davies, E.B., Commun. math. phys., 39, 91, (1974)
- [10] Palmer, P.F., J. math. phys., 18, 527, (1977)
- [11] Puri, Ravinder R., Mathematical methods in quantum optics, (2001), Springer Berlin · [Zbl 1041.81108](#)
- [12] Zurek, W., Phys. rev. D, 26, 1862, (1982)
- [13] Omnes, R., Phys. rev. A, 65, 052119, (2002)
- [14] Blanchard, Ph.; Lugiewicz, P.; Olkiewicz, R., Phys. lett. A, 314, 29, (2003)
- [15] Blanchard, Ph.; Olkiewicz, R., Phys. rev. lett., 90, 010403, (2003)
- [16] Olkiewicz, R., Commun. math. phys., 208, 245, (1999)

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