

## **Generalized quantum dynamics and the broadening of spectral lines of atoms**

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### **Abstract**

The effects of nonlocality in time of interaction on the dynamics of open quantum systems were investigated. It was shown that the generalized quantum dynamics allows to take into account nonlocality in time of the interaction of an atom with its surroundings in describing spectral line broadening. The operator for the dynamics of open system was described in the same way as the dynamics of closed systems. In this case, the operator determines the broadening of spectral line profiles of atoms caused by nonlocal in time interaction with its environment.

<http://dx.doi.org/10.1117/12.447965>

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### **Keywords**

Nonlocal-in-time interaction, Open quantum systems, Spectral line broadening