Theoretical and Mathematical Physics 2001 vol.126 N1, pages 136-145

Boson operator elimination method in the laser cooling of solids

Petrushkin S., Samartsev V.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We use Bogoliubov's boson variabies elimination method to investigate the laser cooling of solid samples. We derive an exact kinetic equation for the quantum description of the laser cooling of glasses and crystals doped by rare-earth ions and find its stationary solution. We estimate the temperature of a laser-cooled glass doped by three-valence ytterbium.

http://dx.doi.org/10.1023/A:1005214517506