Selected Abstracts from Other Physical Review Journals

Abstracts of papers that are published in other Physical Review journals and may be of interest to Physical Review A readers are printed below.

Neonlike iron x-ray laser: Population kinetics and radiative transfer D. Benredjem, P. Zeitoun, A. Sureau, and C. Möller *Laboratoire de Spectroscopie Atomique et Ionique, Université Paris–Sud, Centre d'Orsay, Bâtiment 350, 91405 Orsay Cedex, France*
(Received 15 May 2000; published 24 April 2001)

In this work, we present collisional-radiative calculations for neonlike iron x-ray lasers. These calculations show the importance of the interaction between the x-ray laser beam and the amplifying medium, which is taken into account in the paraxial Maxwell-Bloch approach. Our calculations are in better agreement with a recent experiment (a prepulse plus two main pulses) on the $3p$-$3s$ 0–1 line, than the code EHYBRID which ignores the above interaction. Saturation is attained for plasma lengths near 1 cm, and the calculated effective gain agrees with the experimental value, at least for the first main pulse. [Phys. Rev. E **63**, 056407 (2001)]

Test particle in a quantum gas Bassano Vacchini *Dipartimento di Fisica dell'Università di Milano and Istituto Nazionale di Fisica Nucleare, Sezione di Milano, Via Celoria 16, I-20133, Milan, Italy*
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A master equation with a Lindblad structure is derived, which describes the interaction of a test particle with a macroscopic system and is expressed in terms of the operator valued dynamic structure factor of the system. In the case of a free Fermi or Bose gas the result is evaluated in the Brownian limit, thus obtaining a single generator master equation for the description of quantum Brownian motion in which the correction due to quantum statistics is explicitly calculated. The friction coefficients for Boltzmann and Bose or Fermi statistics are compared. [Phys. Rev. E **63**, 066115 (2001)]