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.

Intermittency and dynamical chaos in reversible spontaneous emission S. V. Prants *Laboratory of Nonlinear Dynamical Systems, Pacific Oceanological Institute of the Russian Academy of Sciences, 690041 Vladivostok, Russia* (Received 22 June 1999)

It is shown that a type of reversible spontaneous emission, the chaotic vacuum Rabi oscillations, may occur in the interaction of two-level atoms strongly coupled with a single cavity mode under a modulation of the atom-field coupling. Such a modulation arises naturally if the atoms move through a cavity in maserlike experiments. The existence of homoclinic chaos in reversible spontaneous emission is proven analytically. Evidence of intermittency associated with the spatial modulation of the vacuum Rabi frequency is shown numerically for the values of parameters that are achievable in present-day experiments with Rydberg atoms moving through a high-Q microwave cavity in the strong-coupling regime. [Phys. Rev. E **61**, 1386 (2000)]

Measurement of the radiative cooling rates for high-ionization species of krypton using an electron beam ion trap R. Radtke, C. Biedermann, T. Fuchs, and G. Fußmann *Max-Planck-Institut für Plasmaphysik, Bereich Plasmadiagnostik, EURATOM Association, D-10117 Berlin, Germany* P. Beiersdorfer *University of California, Lawrence Livermore National Laboratory, Livermore, California 94550* (Received 18 June 1999)

We describe a measurement of the radiative cooling rate for krypton made at the Berlin electron beam ion trap (EBIT). The EBIT was tuned to a charge-state distribution approaching the ionization balance of a plasma at a temperature of about 5 keV. To determine the cooling rate, we made use of EBIT's capabilities to sample a wide range of electron-beam energies and distinguish between different radiation channels. We have measured the x-ray emission from bremsstrahlung, radiative recombination, dielectronic recombination, and line radiation following electron-impact excitation. The dominant contribution to the cooling rate is made by the $n=3-2$, $n=4-2$, ... x rays of the L-shell spectra of krypton, which produce more than 75% of the total radiation loss. A difference with theoretical calculations is noted for the measured total cooling rate. The predicted values are lower by a factor of $1.5-2$, depending on the theoretical model. For our measurement of the cooling rate, we estimate an uncertainty interval of $22-30\,\%$. [Phys. Rev. E **61**, 1966 (2000)]

Excess noise in intracavity laser frequency modulation S. Longhi and P. Laporta *Istituto Nazionale di Fisica per la Materia, Dipartimento di Fisica and CEQSE-CNR, Politecnico di Milano, Piazza Leonardo da Vinci, 32, I-20133 Milano, Italy* (Received 23 July 1999)

The response to perturbations and to stochastic noise of a laser below threshold subjected to an intracavity periodic frequency modulation is theoretically studied. It is shown that, when the modulation frequency is close to the cavity axial mode separation but yet detuned from exact resonance, the laser exhibits a strongly enhanced sensitivity to external noise, which includes large transient energy amplification of perturbations in the deterministic case and enhancement of field fluctuations in presence of a continuous stochastic noise. This large excess noise is due to the nonorthogonality of Floquet laser modes which makes it possible continuous energy transfer from the forcing noise to transient growing perturbations. [Phys. Rev. E **61**, 989 (2000)]