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.

Excitability and coherence resonance in lasers with saturable absorber Johan L. A. Dubbeldam,[1,] Bernd Krauskopf,[2] and Daan Lenstra[1] [1]*Faculty of Sciences, Vrije Universiteit, De Boelelaan 1081, 1081 HV Amsterdam, The Netherlands* [2]*Department of Engineering Mathematics, University of Bristol, Bristol BS8 1TR, United Kingdom* (Received 15 July 1999)

We show that a laser with a saturable absorber, described by the Yamada model, displays excitability just below threshold. A small perturbation, for example, a small input pulse, can trigger a single high output pulse, after which the system relaxes back to the off state. In order to study possible applications, such as pulse reshaping and clock recovery, approximate expressions are given for the excitability threshold and the delay between input and output pulses. Under the influence of optical noise, the system displays coherence resonance: below threshold the laser produces pulse trains with minimal jitter for a particular optimal noise level. This all-optical coherence resonance allows direct experimental verification.

Matrix formulation for the propagation of light beams with orbital and spin angular momenta L. Allen *School of Physics and Astronomy, University of St. Andrews, Fife KY16 9SS, Scotland* J. Courtial and M. J. Padgett *Department of Physics and Astronomy, Kelvin Building, University of Glasgow, Glasgow G12 8QQ, Scotland* (Received 26 May 1999)

Jones matrices describe the polarization, or spin angular momentum, of a light beam as it passes through an optical system. We devise an equivalent of the Jones matrix formulation for light possessing orbital angular momentum. The matrices are then developed to account for light that has both spin and orbital angular momentum.

Chaotic alternation of waves in ring lasers M. Clerc and P. Coullet *INLN, 1361 Route des Lucioles, 06560 Valbonne, France* (Received 14 April 1999)

We intend to give an analytic description of the mechanisms involved in the periodic and chaotic wave alternation frequently observed in ring lasers. A set of amplitude equations is derived from the Maxwell-Bloch equations. These equations are studied analytically and numerically.