

High frequency open loop control of a nonlinear oscillator like a Nd:YVO4 Q-switched laser

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Open loop control of a non-linear oscillator like a Nd:YVO4 acoustic-optic q-switched laser at high frequency (2kHz-2MHz) is studied. The study was done by a four level transition for an ideal solid state laser, where the principal variables to consider were the population inversion and the intensity of the laser. The control parameter for this work was the modulation of the loss into the cavity of the laser, generated for the acoustic-optic modulator, using a square function. The bifurcation diagram of local maxima of the laser intensity in the interval of 1.1-1.5 MHz showed coexistent attractors and different dynamic behaviors, such as, fixed point, periodic and chaotic orbits when the control parameter was change. Words: Q-Switched, Diode Pumped, Solid State Laser.