

Ultrafast operating regimes of semiconductor lasers

Bistability and self pulsation

Magdy Husein Mourad Mohammad ¹ , Idris Kabalci²

1)Engineering Applications of Laser National Institute of Laser Enhanced Sciences (N.I.L.E.S) Cairo university , Egypt

2)Electrical and Electronics Engineering, Faculty of Engineering, Uşak University, Türkiye

Email :dr.magdymourad@niles.edu.eg e-mail: idris.kabalci@usak.edu.tr

GigaHertz and TeraHertz Bistability and Self pulsation are two correlated regimes of operation for semiconductor lasers. With the progress and continuous growth of speed of data communication, the Giga Hertz and Terra hertz signal generation became a must in both data transmission and data reception. Although this crucially important subject of self pulsation and bistability is discovered since more than half a century and occupying a major research branch both experimentally and theoretically till nowadays self pulsation and bistability are neither comprehensively explained nor fully exploited. Consequently, The authors decided to clearly explain the origin of these phenomenon qualitatively and quantitatively in a profound, clear and logic talk. The origin and reason for generaton of these two phenomenon and the influence of semiconductor laser geometrical and physical parameters on bistability and self pulsation will be covered during the talk.