

Quantum Electronics**Researchers from University of New Mexico report recent findings
in quantum electronics**

2008 DEC 22 - (VerticalNews.com) -- "Quantum-dot (QD) lasers exhibit many useful properties such as low threshold current, temperature and feedback insensitivity, chirpless behavior, and low linewidth enhancement factor (alpha(H)-factor). Although many breakthroughs have been demonstrated, the maximum modulation bandwidth remains limited in QD devices, and a strong damping of the modulation response is usually observed pointing out the role of gain compression," scientists in the United States report. "This paper investigates the influence of the gain compression in a 1.3- μ m InAs-GaAs QD laser and its consequences on the above-threshold alpha(H)-factor. A model is used to explain the dependence of the alpha(H)-factor with the injected current and is compared with AM/FM experiments. Finally, it is shown that the higher the maximum gain, the lower the effects of gain compression and the lower the alpha(H)-factor," wrote F. Grillot and colleagues, University of New Mexico. The researchers concluded: "This analysis can be useful for designing chirpless QD lasers with improved modulation bandwidth as well as for isolator-free transmission under direct modulation." Grillot and colleagues published their study in *IEEE Journal of Quantum Electronics* (Gain Compression and Above-Threshold Linewidth Enhancement Factor in 1.3- μ m InAs-GaAs Quantum-Dot Lasers. *IEEE Journal of Quantum Electronics*, 2008;44(9-10):946-951). For more information, contact F. Grillot, University of New Mexico, Center High Technology Materials, Albuquerque, NM 87106, USA. Publisher contact information for the *IEEE Journal of Quantum Electronics* is: IEEE-Institute Electrical Electronics Engineers Inc., 445 Hoes Lane, Piscataway, NJ 08855, USA. Keywords: Bandwidth, Electronics, Emerging Technologies, Nanotech, Nanotechnology, Quantum Dots, Quantum Electronics, University of New Mexico. This article was prepared by Electronics Newsweekly editors from staff and other reports. Copyright 2008, Electronics Newsweekly via VerticalNews.com.

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