

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Temperature dependence of the null hysteresis loop in polarization switching of vertical-cavity surface-emitting lasers YUEH-CHEN LI, YU-HENG WU, WANG-CHUANG KUO, TSU-CHIANG YEN, Department of Physics, National Sun Yat sen University — This research investigated the frequency-dependent polarization switching hysteresis loop (PSHL) of vertical-cavity surface-emitting lasers (VCSELs) in constant ambient temperature. The special feature of VCSELs is the polarization switching (PS). In most case, the switching current in the rise and decline bias are not the same, and shows hysteresis. The ambient temperature was controlled in this experiment. The hysteresis loop width of polarization switching disappears as the modulation frequency is lower than a critical frequency. Experimental results show that the critical frequency depends on the ambient temperature. Experimental data presents that the thermal effect plays a major role in the hysteresis of PS. These results greatly contribute to the understanding of the VCSEL's PSHL.

Yueh-Chen Li
Department of Physics, National Sun Yat sen University

Date submitted: 09 Nov 2011

Electronic form version 1.4