Physical limits of semiconductor laser operation: A time-resolved analysis of catastrophic optical damage - DTU Orbit (28/03/2019)

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The early stages of catastrophic optical damage (COD) in 808 nm emitting diode lasers are mapped by simultaneously monitoring the optical emission with a 1 ns time resolution and deriving the device temperature from thermal images. COD occurs in highly localized damage regions on a 30 to 400 ns time scale which is determined by the accumulation of excess energy absorbed from the optical output. We identify regimes in which COD is avoided by the proper choice of operation parameters.

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