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Continuous-wave optical parametric oscillators: recent developments and prospects

Source

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Abstract

We review the progress in the development of continuous-wave optical parametric oscillators over the last decade. A recently developed theoretical analysis shows that their stability strongly depends on the group velocity dispersion of the nonlinear material used. Now, these devices generate not only near- and mid-infrared radiation, but also visible and terahertz light. Active locking to external references like atom transitions, resonators, or frequency combs enables mode-hop-free operation up to days. Furthermore, whispering-gallery-resonator-based devices enable the realization of millimeter-sized monolithic resonators with microwatt oscillation thresholds.