

Multiple diode laser superposition



Overview

This technique describes the combining of two or multiple lasers using diffractive optical elements like diffraction gratings or volume Bragg gratings. In both cases power scaling can be achieved with combining efficiencies $> 90\%$. Three types of coherent beam combination include a common resonator keeps multiple laser elements in phase (top); an evanescent-wave coupling between closely spaced laser elements keeps their output in phase (center); and an active feedback loop, with wavefront sensors detecting the phase of each. In the generation of side lobes, which is decided by mutual-locked mode (here, the definition of mutual-mode-locked is that the interference of space light between different emitters produces side lobes. Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other. What techniques are available to combine multiple diodes outputs to increase beam power?

I read that someone had combined 2 diodes but details on how they had done it were sparse.

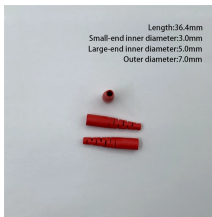
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Spectral beam combination has been successfully achieved for high power fiber lasers, diode laser arrays and diode laser stacks. We have recently achieved the spectral beam combination ...



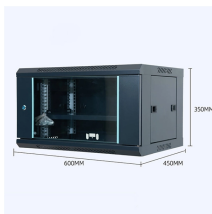
To some extent the emission wavelengths of diode lasers can be tuned by changing the laser temperature. However, shifting the emission wavelength over several nanometers as mentioned ...



In this study, we propose an SBC structure based on blue diode wavelength-locked arrays, utilizing the blue laser array as the fundamental unit and performing the combination along ...



Another way to combine two or more lasers of the same wavelength is to "knife edge" them. Essentially, 2 or more lasers are "stacked" by using mirrors. Its hard to explain without using ...



Spectral beam combining of a broad area diode laser is a promising technique for direct diode laser applications. We present an experimental study of three mini-bar stacks in an external ...



We demonstrate the use of a binary diffractive optical element in a very simple setup to convert the multilobed beam from a low fill factor array of coherent laser diodes into a quasi ...



Spectral beam combing of diode laser array stack in an external cavity can provide higher power output. In this work, the device with the output power of 268 W with its efficiency of 100%, and the beam ...



Diode-laser arrays have long generated high powers by combining the outputs of many laser stripes. That works well for applications, like diode pumping, that do not require high beam ...



Detailed analysis of the physics of passively phase-locked lasers still needed. Careful design & optimization of the CBC architecture in regard with the devices. New results in BRIDLE expected !

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