

# Spectral Shaping of a Broadband Multimode Diode Laser Using a Virtually Imaged Phased Array

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We have built a spectral shaping system, based on a virtually imaged phased array (VIPA) and a digital micromirror device (DMD), to manipulate a multimode diode laser spectrum. Due to its working principles, the system reduces the available optical power by  $\sim -27$  dB. To overcome this limitation, we have seeded its output, using a double-pass configuration, in a tapered amplifier, to increase the available power to  $\sim 60$  mW. We have implemented spectral features with a resolution of  $0.1 \text{ cm}^{-1}$ , which is limited by the characterization spectrometer. This may be attractive for a wide range of applications, especially for cooling the translational, vibrational, and rotational degrees of freedom of a diatomic molecule.