

Robust high-average-power lasers and scaling to high pulse energy

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Pulsed laser sources have a plethora of applications, many of which require or benefit from high average power. This presentation gives an overview of modern laser and optics development at the Fraunhofer ILT in Aachen for various applications in industry, energy, health, and science. These include robust laser systems tailored for space applications, the upscaling of femtosecond lasers to the multi-kilowatt range using the Innoslab platform, and nonlinear pulse compression to achieve few-10-femtosecond durations using the multi-pass cell scheme. Furthermore, architectures for high-energy, high-average-power diode-pumped solid-state lasers are being explored for a variety of applications, including secondary sources such as particle acceleration and inertial confinement fusion.

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