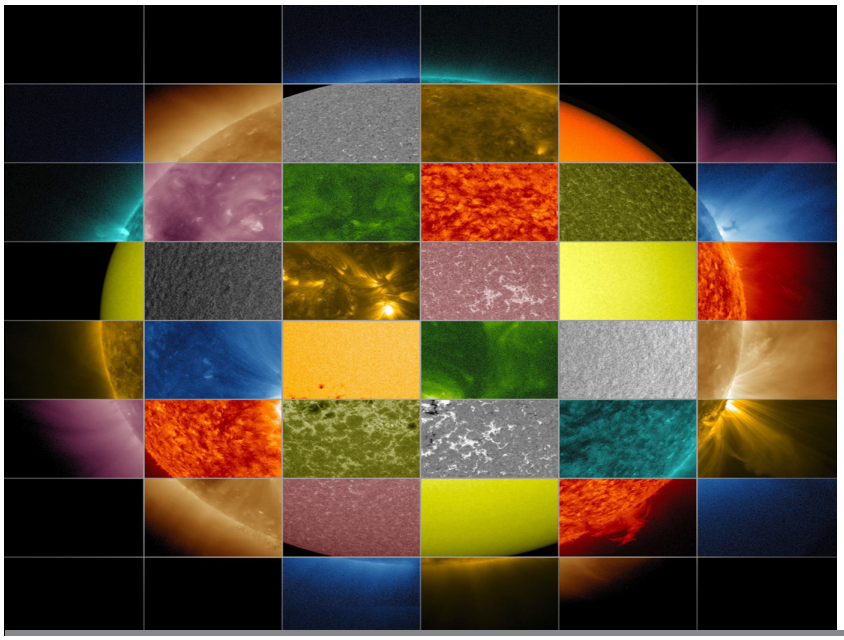

National Aeronautics and Space Administration

TECHNOLOGY SOLUTION

Optics

Self-Phase-Locked Distributed Gain Laser Architecture

Provides efficient, passive, and coherent beam combinations from distributed gain sources.

While both high power and high efficiency laser sources are desired for many applications, limitations on their development and use include power scaling among the many gain materials due to excessive optical intensity. Moreover, as power among many gain elements can be increased, combining the power efficiency has thusfar proven elusive.

BENEFITS

- Flexibility in laser system design
- Achieves both higher power and higher efficiency

THE TECHNOLOGY

NASA Goddard Space Flight Center has developed a laser architecture to coherently combine energy from spatially distributed gain sources. Using a combination of lenslet arrays (to split and combine separate beams) or diffractive optical elements, each source can be phase-matched into an effective single source.

APPLICATIONS

The technology has several potential applications:

- High power laser development
- Semiconductor optics systems

PUBLICATIONS

Patent No: 10516246

technology.nasa.gov

NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

GSC-17541-1, GSC-TOPS-196

More Information

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