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Advanced Laser Technology and Applications

Zhiyi Wei
Chunqing Gao
Pu Wang
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Introduction

The conference was held online from 8–10 April 2022, as part of the 2021 International Conference on Optical Instrument and Technology. It provided a technical forum for reporting and learning about the latest research and development in science, as well as for launching new applications and technologies in engineering.

The conference was organized into technical sessions on high power laser systems and technologies, advanced laser systems and technologies, fiber lasers and technologies, and laser beam manipulation. A poster session was also provided. A total of 37 presentations, including 13 posters, were presented at the conference. The latest achievements from all over the world, especially in China, in the field of high-power lasers, fiber lasers, laser beam manipulation, and laser applications were reported in those presentations. The invited talks cover the achievements on laser technology and its applications, such as 100 TW mid-infrared intense laser based on optical parametric chirped pulse amplification, high-power high-energy ultrafast thin-disk oscillators, high power high repetition rate femtosecond all-solid-state Yb amplifier, 20-W level sub-100 fs solid-state Yb laser, output characteristics of solid-state microchip lasers and HeNe lasers, high energy and high repetition rate nanosecond lasers, polycrystalline transparent ceramics for mid-Infrared solid state lasers, progress on the generation of reconfigurable structured light beams in fiber amplifiers, single-cycle all-fiber frequency combs, demonstration of channel multiplexing quantum communication exploiting entangled sideband modes, controlled transverse mode emission from fiber lasers, mid-infrared generation via cascaded intra-pulse difference frequency generation, a proposed road to hundred-Joule laser at 10 Hz based on stimulated Brillouin scattering beam combination, high energy 2μm single frequency pulse lasers, generation and manipulation of twisted light, vortex families generated by Fermat spiral photon sieve, and advances on the generation and representation of structured beams.

As chairs of this conference, we would like to express our thanks to all those participants who contributed through their presentations, to the session chairs, and to the program committee members.

Zhiyi Wei
Chunqing Gao
Pu Wang

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