

Pressemitteilung**Helmut-Schmidt-Universität, Universität der Bundeswehr Har****Astrid Strüßmann**

30.05.2023

<http://idw-online.de/de/news815193>Buntes aus der Wissenschaft, Forschungsergebnisse
Elektrotechnik
überregional**The world's highest peak power laser-oscillator****Hamburg scientists at Helmut Schmidt University/UniBw H have succeeded in developing a particularly powerful thin-disk laser oscillator.**

Hamburg scientists at Helmut Schmidt University/UniBw H have succeeded in developing a particularly powerful thin-disk laser oscillator. Laser oscillators, unlike laser amplifiers, generate and amplify laser radiation simultaneously from a single box.

The core part of the system consists of a laser-gain medium in a special thin-disk geometry and a unique configuration of mirrors to form the laser resonator. The laser emits 14 million pulses every second, and each pulse contains 110 MW of peak power!

Until now, these outstanding values could only be achieved by multiple amplification with complex and huge laser systems. The new thin-disk oscillator developed by Prof. Pronin's team in the Chair of Laser Technology can now achieve such values with a much simpler setup and without additional amplification.

Thanks to its high peak power, the output of the new oscillator can be converted into the deep UV spectral range where no frequency-stable lasers currently exist. This type of deep-UV laser will enable a novel type of extremely precise clock – nuclear clock – which may help scientists detect dark matter and unravel the main mystery in modern physics.

In addition, the newly developed instrument, once commercialized, may offer other new applications in ultraviolet semiconductor metrology and high-end high-precision spectroscopy.

wissenschaftliche Ansprechpartner:

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Originalpublikation:

This article refers to the accepted publication in Optics Express, which is to be published soon:

"S. Goncharov, K. Fritsch, O. Pronin. 110 MW Thin-Disk Oscillator. Optics Express (2023)"



The thin disc laser in its monolithic box leads to operational stability and reproducibility
Eric Schambroon
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