

# QUANTUM PHYSICS, OPTICS AND LASER TECHNOLOGIES

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## High power/energy high repetition rate mono-module disk laser

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The mono-module disk laser concept is an effective design for diode-pumped solid-state lasers, which allows the realization of lasers with super-high output energy/power, having very good efficiency and also excellent beam quality. Since the first demonstration by acad. N.G. Basov with colleagues of disk laser in 1966 the output power of mono-module disk has been increased to the level of few kW in Continuous Wave (CW) mode of operation. Well developed "Zig-Zag" disk laser technology does not look like as a perspective one for further output parameters growing. The scaling laws for mono-module disk laser design show that the limits for CW mode of operation is far beyond 100 kW for output power and the energy can be higher than 100 J in pulse-periodic mode of operation. Due to the efficient porous cooling technology and possibility of amplified spontaneous emission (ASE) suppressing the operation of the big size mono-module disk laser geometry is possible in CW and pulse-periodic (P-P) modes at extremely high output energy/power.

### Biography

V V Apollonov is a leading specialist in the area of basic principles of creation and development of high power laser systems and high power laser radiation interaction with matter. He is the author of 1920 publications (18 books, 546 presentations, 148 patents, 954 articles and 92 chapters). He is the Member of European and American Physical Society, SPIE, AIAA, American Society for QE and the Member of Specialized Scientific Council of Russia. He is a Full Member of Russian Academy of Natural Science and Academy of Engineering Sciences, Member of the Presidium RANS.

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