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## Optical amplifiers for ICAN: Challenges and opportunities

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The ICAN concept of coherent combination of femtosecond pulses at high energies presents new challenges on the optical amplifiers in terms of fidelity, reliability, efficiency, and cost. The more mature continuous-wave amplifiers for coherent combination, femtosecond amplifiers, high-power amplifier systems, and not least telecom amplifiers lay a very strong foundation for the ICAN amplifiers. However there are important differences, and important points from amplifier physics to amplifier configurations need to be better understood before an ICAN system can be realized. At the same time ICAN's scale and highly parallel architecture open up new design opportunities that can help to overcome some common amplifier problems. Throughout this work it is critical to stay aligned with rapidly developing commercial amplifier markets in order to maximize synergies and minimize cost. We will present and compare different amplifier options, from flexible fiber approaches with or without delivery fiber to stiff "rod fibers". These all hold the promise of being able to meet the requirements of ICAN as well as other applications.

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