**Another Milestone in the European-American Partnership in Laser Technologies**

**Strategic Partnership Program Agreement between Institute of Physics of the Czech Academy of Sciences and Lawrence Livermore National Laboratory on performance ramping of the L3-HAPLS laser signed**

On December 1, 2021, a Strategic Partnership Program Agreement was signed between the Institute of Physics of the Czech Academy of Sciences and the Lawrence Livermore National Laboratory (LLNL). The signed agreement will build on the existing cooperation between ELI Beamlines (which is a part of the European project Extreme Light Infrastructure) and LLNL and will promote long-term partnership in development, testing, and operation of new laser technologies. The agreement is supported by the Czech Academy of Sciences and the U.S. Department of Energy and covers a period of five years. Its main goals are to ramp the performance of the ELI Beamlines’ L3-HAPLS laser system to its full design specifications, to ensure its long-term operation for users, and to support the scientific use of the ELI Beamlines laser and experimental facilities for joint scientific experiments.

*“The Strategic Partnership project builds on the extremely successful collaboration between the two partners, which has resulted in the commissioning of an exceptional laser system. L3-HAPLS represents a landmark on the way to high-repetition lasers petawatt class lasers that allow the use of compact particle acceleration schemes known as  laser wakefield acceleration (LWFA). In particular, it will be ELI Beamlines users who will benefit from further improvements to the L3-HAPLS laser parameters,*“ says Roman Hvězda, the director of ELI Beamlines.

The L3-HAPLS laser is a high repetition-rate, high average-power laser system representing a substantial advancement over the state-of-the-art in Petawatt (PW)-class short pulse laser technology. The laser was developed and built by LLNL in cooperation with ELI Beamlines between 2013 and 2017, and was integrated into the ELI Beamlines facility in 2018. In the past three years, the L3-HAPLS laser has been successfully used for initial scientific experiments.

Within the new partnership between ELI Beamlines and LLNL, the L3-HAPLS laser will be ramped to 1 PW peak power at a full repetition rate of 10 Hz. The system will be further improved including implementation of elements of artificial intelligence and machine learning into its control system. The operation of the L3-HAPLS laser at the PW level with 10Hz repetition rate for experiments will place ELI-Beamlines into a unique and leading position amongst laser facilities worldwide.

LLNL is a world leader in the development of high repetition-rate high peak-power laser technology. It has developed the laser technology and expertise to team with ELI Beamlines to achieve the goals of the signed agreement.

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