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PRESS RELEASE

First laser systems arrived to ELI-ALPS Research Istitute

The mid-infrared and the Terahertz laser systems are the first to have arrived to ELI-ALPS Research Institute in Szeged, Hungary. The scientific novelties of these systems were introduced to the public yesterday within the framework of a press conference. The amount of financial support for the second implementation phase of ELI-ALPS Research Institute is 40.052 billion HUF, 85% of which is provided by the European Union's Regional Development Fund.

The first laser systems have arrived to ELI-ALPS. The research and development tender for the design, implementation and startup of the Terahertz source was won by the University of Pécs in Hungary for EUR 2,74 million.

As ELI-HU Non-Profit Ltd. Research Technology Director Károly Osvay stated, 'Terahertz radiation has been used earlier in only a couple of research institutes, became well-known for the public in the last decade. Security gates at airports and borders operate at this wavelength, for example. Complementary to these already known applications, the terahertz source of ELI-ALPS is pulsed, meaning that it generated high-intensity electromagnetic fields in a given time period, not permanently. This laser-driven THz source will presumably open new basic research opportunities in nanoscience as well as in the investigation of dynamics of chemical reactions. Next year the terahertz capability will be completed with a high energy pulsed laser, so that we will be able to explore THz nonlinearities as well as particle acceleration.'

The research institute's mid-infrared laser has been developed in a joint research and development project led by Fastlite, with the participation of ELI-ALPS colleagues for approximately EUR 1,59 million.

Regarding the mid-infrared laser source, Károly Osvay said, ’ This system will primarily function as a new device for biologists, biophysicists, chemists and pharmacists examining molecules, molecule stuctures, vibrational and kinetic structures and their dynamics. Considering its scientific novelty, two European research teams already indicated their purpose to use the laser for their experiments. Next week we are continuing discussions with colleagues at the Biological Research Centre in Szeged, who intend to examine biological and biophysical samples in ELI-ALPS.’

The importance of the recently shipped laser systems is the fact that there were no user-accessible light sources on these wavelengths earlier. The devices were tempered during the weekend, and the ELI-ALPS staff together with the developers started their assembly on Monday, 18th September. The third, so called high repetition-rate laser is due to arrive in two weeks, which will be used by researchers in the fields of surface physics, solid-state-, and atomic and molecular science. The acceptance tests and the trial periods for all three systems will probably end in late October, hence the long waited and already booked experiments are starting from November.

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The main object of ELI-ALPS (Extreme Light Infrastructure Attosecond Light Pulse Source) project is creating a unique European research centre, providing the international research community with laser pulses and further sources based on these. The Szeged facility will stand out from the institutes producing the highest intensity laser pulses in the world with its highest repetition rate and shortest pulses. This facility is expected to lead to reaching outstanding results not only in the field of ultrafast physical processes but also in biological, medical and materials sciences.

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