

EU to build most powerful laser ever in Prague

April 28 2011, by Bob Yirka



ELI-Beamlines Facility

(PhysOrg.com) -- As part of the European Union's commitment to remaining at the forefront of technology, the European Commission (the governing body of the European Union) has laid out plans for three initial high powered lasers to be built in Eastern Europe with a fourth to come at a later date. The first superlaser in the project is to be built near Prague, with a goal of achieving exawatt class, which would make it at least a hundred times more powerful than anything that exists today.

The purpose of the Extreme Light [Infrastructure](#) (ELI), as its known, is first and foremost to serve as a research tool. Such a [laser](#) could be used to develop new cancer diagnosis and treatments as well as possible ways to deal with nuclear waste. In addition, the simple existence and experimentation with such a powerful laser could expand knowledge of nanoscience and molecular biology.

The ELI project was not easily won, as there were five countries lobbying to have it in their home states, and thereafter there was some bit of contention among the commissioners regarding feasibility and financing of the project. With the win, though, the Czech Republic will be sit at the forefront of optic and photonic research, adding to its already impressive résumé; for the past ten years, Prague has hosted Precision Automated Laser Signals (PALS), one of the premier laser systems in all of Europe. The installation will signal another milestone as well; the ELI venture will be the first big research project funded by the EU that will be located in an Eastern European country.

Slated to become operational by 2015, and located in Dolní Břežany, near Prague, the superlaser will operate using super-short pulses of very high energy particle and radiation beams, with each pulse lasting just 1.5×10^{-14} of a second, more than enough time to conduct high energy research experiments.

The installation in Prague will be followed up by projects in Hungary and then Romania, with each specializing in different areas of research; all of which will culminate in the development of a fourth super-super laser in an as yet to be decided location, which is expected to have twice the power of the original three lasers (though current plans have it comprised of 10 beams) which should add up to 200 petawatts of power; the theoretical limit for lasers.

The project is expected to cost in the neighborhood of €700 million.

More information: www.extreme-light-infrastructure.eu/

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