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Department of Energy Awards Grant to Small Waltham Business

Big Gains for High Energy Physics

Waltham, Aug 24, 2022 -- Open Source Instruments has been selected for a Department of Energy's Small Business Innovation Research (SBIR) Phase I award. Open Source Instruments will receive \$190,000 of non-dilutive funding for research and development related to their proposal: *Contactless Position Measurement for Highly Reflective Components*.

This grant will enable Open Source Instruments to develop a novel computer-vision system that measures the locations of highly reflective components so that they may be moved into position without contact. Particle accelerators and fusion reactors require automated assembly with little or no human handling of components.

"Alignment and assembly of cryomodule components in cleanroom environments are critical to achieve the level of performance required in high energy physics accelerators. Contactless methods, such as those proposed by Open Source Instruments, could further improve the performances of these cryomodules, by reducing contaminants that may be introduced during the assembly process." says Dr. Alexander Romanenko Division Head of Applied Physics & Superconducting Technology at Fermilab, "This could lead to both higher performance levels of future accelerator components and minimizing the costs of

contamination mitigation strategies, such as re-processing or re-assembling of the contaminated parts or modules.”

U.S. Energy Secretary Jennifer Granholm announced that 259 Department of Energy grants totaling \$53 million will be made this summer to 210 small businesses in 38 states. The awards include projects relating to particle accelerators and fusion technology, applied nanoscience, quantum information applications, and dark matter research along with a wide range of other efforts.

Steve Binkley, Acting Director of the DOE’s Office of Science said “DOE’s investments will enable these economic engines to optimize and commercialize their breakthroughs, while developing the next generation of science leaders and ensuring U.S. scientific and economic competitiveness that will benefit all Americans.”

Through the SBIR program across the federal government, small business powers the U.S. economy and generates thousands of jobs, both directly and indirectly, the DOE notes. DOE Small Business Innovation Research (SBIR) awards aim at transforming DOE-supported science and technology breakthroughs into viable products and services. The awards also support the development of specialized technologies and instruments that aid in scientific discovery.

About Open Source Instruments, Inc.:

Open Source Instruments is an electronic engineering firm which designs research tools for scientists. The company was founded in 2005 to manufacture survey instruments for High Energy Physics (HEP) experiments. The founders of OSI worked together at Brandeis University Physics Department on the construction of the ATLAS End-Cap Alignment System at CERN, for which they created a survey instrument called the BCAM. The BCAM was designed for the ATLAS detector, and was subsequently requested by the ALICE, CMS,

and LHCb collaborations at CERN. In the past fifteen years, OSI manufactured hundreds of BCAM's devices for high energy physics experiments.

Other instrumentation developed by OSI includes the Wire Position Sensor (WPS) for CERN in 2008. Dozens of WPS were made for CERN and NSRL at Brookhaven. High energy physics instrumentation remains an important part of the company's business.

Shortly after it's inception, the company began a partnership with epilepsy researchers at University College London Institute of Neurology (UCL ION) to collaboratively design a fully-implantable, telemetry system for recording high-fidelity EEG and other biometric measurements in rodents. The technology is now used in academic and corporate animal research laboratories worldwide. Open Source Instruments is the recipient of three SBIR grants to date.

More information about all the projects announced by DOE today is available at the following link: <https://science.osti.gov/sbir>

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