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Acoustic Tractor Beam Named a Top 10 Physics Breakthrough

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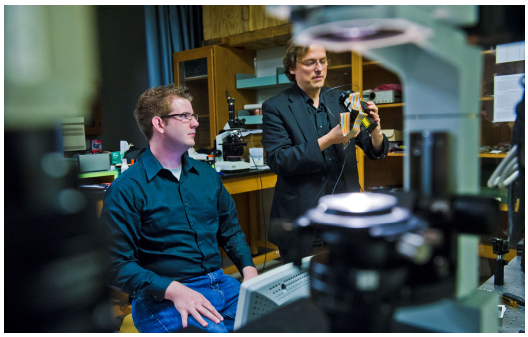
BLOOMINGTON, Ill.— Creation of the first acoustic tractor beam by a team including Illinois Wesleyan University physics professor Gabriel Spalding and alumnus Patrick Dahl ’12 has been included in the top 10 breakthroughs in physics in 2014, as judged by *Physics World* magazine.

The team, which also included Christine Démoré and Mike MacDonald of the University of Dundee, Scotland, was recognized for creating the **first acoustic tractor beam** by using energy from an ultrasound array to exert force behind a centimeter-sized object and pull it toward the energy source.

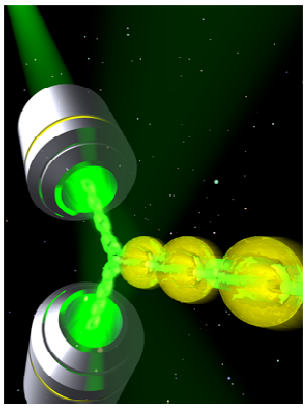


Patrick Dahl ’12 and Prof. Gabe Spalding

The immediate application of the new tractor beam technology is medical. One goal is to improve ultrasound surgery used to treat and destroy tumors more effectively and efficiently. It could also be used to treat Parkinson’s disease and chronic pain, or to deliver prescription drugs to a precise point in the body or a safe supply of universal donor blood, according to Spalding, who is the B. Charles and Joyce Eichhorn Ames Professor of **Physics.**

“By creating such a tractor beam in the laboratory, the research team will inspire scientists to think differently about ultrasound, which could lead to the development of new and innovative medical applications,” said Hamish Johnston, editor of *Physics World.* The magazine is published by the Institute of Physics, a professional organization for physicists around the globe.

“This honor will certainly bring our work to the attention of a much wider community, and that usually ensures that the work will have much great impact on the experimental ‘toolkit’ that we all share,” said Spalding. “Hopefully, we can raise the profile of the ongoing dialogue about how we think of radiation pressure, about when the language fails to be meaningful, and about how we can open up new opportunities by changing the way we approach certain kinds of problems.”



The top 10 breakthroughs identified in the list were chosen by the **Physics World** editorial team, who reviewed over 350 news articles about advances in the physical sciences published on physicsworld.com this year. The top breakthrough was awarded to the first-ever landing of a man-made probe on a comet in August.

“*Physics World* has been my favorite science magazine for a long time, so it’s really a thrill that they’re showing such an appreciation for our work,” Spalding added.