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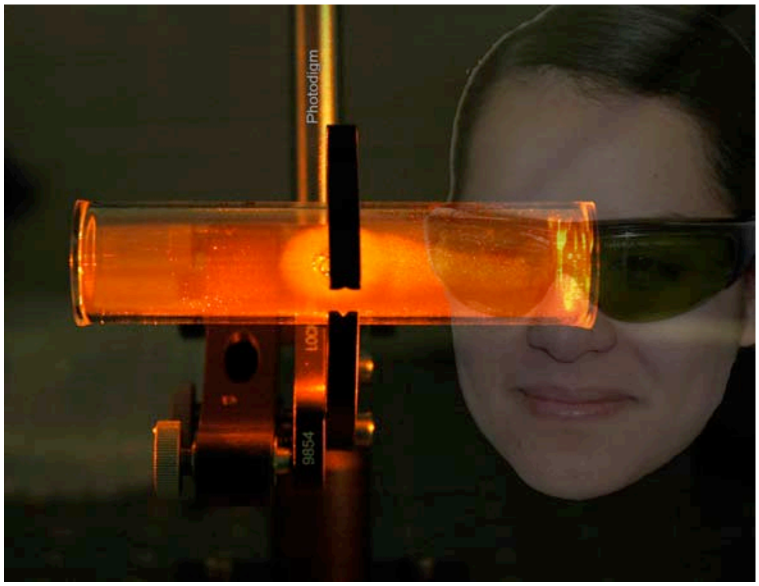
Photodigm Lasers Enter the Mainstream of Cold Atom Physics



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Photodigm engineer Judy Perez observes the faint deep red glow of rubidium vapor, fluorescing under the illumination of a Photodigm semiconductor laser precisely tuned to match an electronic transititon of the Rb atoms.

Supported by the SBIR grants from the NSF, US Air Force, and DARPA, Photodigm is working with leading researchers around the world by developing a new generation of semiconductor lasers that can precisely and accurately probe the internal states of an atom. Cold atom physics researchers have discovered that precisely tuned laser beams can act as a refrigerator, cooling a beam of atoms to temperatures close to absolute zero. These cold atoms form a new state matter called a Bose Einstein Condensate, whose discovery was the subject of the 2001 Nobel Price in Physics. Researchers are able to begin their work with large and expensive laboratory lasers, but progress in the field requires the precision and scale of semiconductor lasers. However, these lasers have proven very difficult to produce with the stability and reliability necessary.

Photodigm's SBIR grants have provided critical funding that has allowed Photodigm to make substantial breakthroughs in the design, materials, and process technology needed to produce these lasers with the performance needed. The lasers required by cold atom physics researchers are now available as a standard product from Photodigm. Photodigm is continuing to work to make the lasers even more reliable, powerful, and versatile, and we are working with commercial customers who are developing products using these lasers.

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