

As a summer fellow at INL's Center for Space Nuclear Research, John Bess--now an INL staffer--studied how a nuclear thermal rocket could be constructed from multiple launch vehicles.

Space nuclear research center creates career path to INL

by [Jo Seely](#), *INL Nuclear Science & Technology communications intern*

For many, a summer internship is little more than a means to a meatier resume. But for John Bess, a summer research opportunity at Idaho National Laboratory has led directly to a job.

After noticing an intriguing announcement, he made a phone call that led him to apply for a summer fellowship. He parlayed that experience into a work-study opportunity, and it wasn't long before Bess was a formal member of INL's Reactor Physics Analysis team.

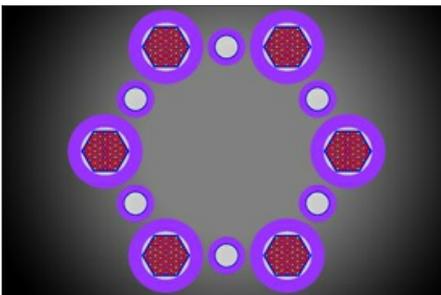
"We collect top-quality students from around the country and place them on a path to become a part of INL," said Steven Howe, director of INL's [Center for Space Nuclear Research \(CSNR\)](#). "By working here for the summer, we hope they'll see it's a nice place to be, both to live and work."

In 2005, Bess heard of the CSNR grand opening while in his master's program at [University of Utah](#). He contacted Howe about internships or fellowships within the center, and the next summer, Bess landed a CSNR summer fellowship. He and 12 other students spent their time working on projects that combined nuclear science and space.

"During the fellowship, I gained a lot of insight while looking at reactor systems from a different point of view," said Bess. "When you're looking at power reactors here on Earth, you're looking at much larger systems, while in space they're much more compact. You're trying to push your capabilities differently."

Bess worked on two research projects that summer through the [NASA Exploration Systems Architecture Study](#). He researched how a nuclear thermal rocket might be able to increase the payload that could be delivered to the moon's surface while also decreasing mass at launch. A second project studied whether current launch vehicles could be assembled in orbit into a larger rocket to deliver payload to the moon.

In the summer of 2007, Bess continued CSNR research as a part of the [Next Degree program](#). The program aims to give students the opportunity to continue with CSNR research, while allowing time to complete their own master's and doctoral theses.



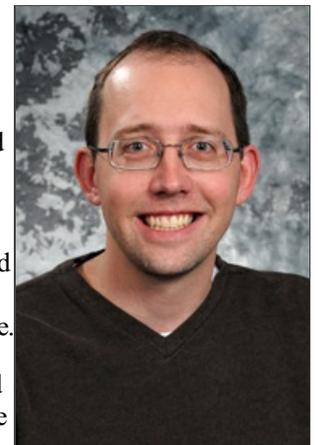
For his Ph.D. dissertation, Bess completed research on a cluster of modular components that would form a reactor in the lunar surface.

concepts he used within his research at CSNR.

"The computer modeling work at CSNR has helped my work today, especially in critical analysis capability — what will work, what won't work, how materials will affect it and the overall confidence of the system," said Bess.

While his work doesn't directly apply to the research that still goes on in CSNR, Bess remains a resource to his peers.

"John was patient," said Jeff Katalenich, a CSNR summer fellow who worked with Bess in 2007. "He always had the time to help you out." Katalenich recalled a time at school when he e-mailed Bess for information. "By the end of the day, my inbox was full of e-mails from John."



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Originally from Lake Shore, Utah, Bess now lives in Idaho Falls with his wife, Jenny, and their three children.

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