

Alum Josh Zirbel Makes Nobel Choice for Graduate School

Editors note: Josh Zirbel (BS '01) had the singular good taste to go to the University of Colorado-Boulder to work with Physics Professor Carl Wieman just a few months before the latter received the 2001 Nobel Prize in Physics for his work on Bose-Einstein Condensation (with Eric Cornell of UC and Wolfgang Ketterle of MIT). Josh writes:

Immediately following graduation, I came directly to Colorado to begin work with Carl Wieman at JILA. Right away he put me to work testing for a new Rubidium-85 Bose-Einstein Condensate (BEC) machine so that we can further investigate the self-attraction and repulsion of the condensate near Rubidium-85's Feshbach resonance.

My first task was to test a new transfer scheme whose purpose would have been to take cold atoms from one Magneto-optical trap (MOT) in a "dirty" chamber and transfer them to a "clean" chamber in which we would cool the atoms further to the BEC transition. The idea was to use a continuous stream of atoms from the MOT. Although it was simpler than other transfer methods to set up, it turned out to not give us any fruitful results so we abandoned it.

We then decided to try a more conventional method of pushing the cloud of atoms up to a speed of about 3 meters-per-second from the MOT using a hundred-microsecond resonant laser pulse. We then guided the cloud along a bent transfer tube using a quadrupole magnetic field. This method immediately gave us results. At this point, however, we are having some problems with loss and getting the timing hammered out for the magnetic field at the bend. Hopefully, we will get this working successfully over the next month. Then the "clean" chamber can be made and we can begin some real science with a BEC by midsummer. So far, it has been really fun setting up a lab, since we have the opportunity to do things correct from the beginning.

Now that I am gone and have had time to think about it, I would like to thank all of the Physics professors. I really didn't know how fortunate I was to have instructors who were so willing to take, literally, their afternoons to introduce me to interesting physics and to discuss the random things I would come to them with. Those discussions have been the most enjoyable memories from my time at UMR. Best regards - Josh.



Donald Packwood Receives Professional Degree at Winter Commencement

The Physics Department was pleased to honor alumnus **Donald Lee Packwood** (BS '63, MS '65) with a **Professional Degree** in Physics during the December 2001 Commencement. Don recently retired after 20 years with Hewlett Packard's Semiconductor Business Group, now part of Agilent Technologies, where he served in a variety of technical dual-ladder and management positions in corporate and division research and development, and in manufacturing.

He also developed processes to manufacture computer and cell phone chips and invented several semiconductor process architectures and semiconductor device structures, for which he received two patents. Don has published numerous articles in the scientific literature and presented papers at a variety of conferences associated with the semiconductor industry. He has served on the board of directors of the American Vacuum Society, a part of the American Institute of Physics, and has been a member of the American Physical Society, the IEEE, the Electrochemical Society, and the Materials Research Society. Don holds the relatively rare distinction of having earned a Physics B.S. in 1963 from the **Missouri School of Mines**, and a Physics M.S. in 1965 from the same institution, which in the intervening two years had changed its name to the **University**



Don Packwood

of Missouri-Rolla. In 1971, he earned a Ph.D. in physics from the University of Missouri-Columbia. Don, who was joined at Winter Commencement by his wife **Lona**, and his sister **Carol Dunning** and her husband **Alan**, is an avid photographer, runner, and adventurer who among other activities, offers his services as a guide for extended trips into the depths of the Grand Canyon. During his visit to the Rolla campus, Don toured the department, and met and discussed his career experiences with UMR graduate and undergraduate students at an informal departmental luncheon.

To Contact UMR Physics

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