

Remembering Alvin Tollestrop a personal story

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I was a young guy, age 26 when I first met Alvin. He was on shift and I came by his experiment late one evening to check on the running experiments. It was part of my job and in the evenings we could actually get out and socialize with the Physicists. One day he came by my desk at FNAL to interview me for a new position in the Energy Doubler / Saver group. I got the job.

I was hired to work at the B-12 magnet string test facility. It never occurred to me or anyone else at the time that this work was hazardous and probably being young and brave and expendable played a role. I have to tell you that the work was exciting. We always conducted out tests late at night mostly due to the fact that we had to cool down the magnets first. Being the driver of a high powered string of SC magnets was a real rush to use a phrase of the times. These magnets despite their small size stored the energy of a stick of dynamite or in more peaceful terms two jelly donuts. Our job was to find the operational path that always let the magnets behave like jelly donuts and not the TNT! It did not always work out that way at first but as we gained experience and sometimes learned the hard way, we began to make better and better magnets and finally they always worked.

As a kid fresh out of school I had learned a lot of Physics and I still believe that my education was the best I could get but getting degrees and developing career skills are two different things.

The Fermi Energy Double/Saver group was for me, the world's best finishing school and it was there under the tutelage of Alvin Tollestrop and others that I developed the skills that would sustain my career. All this was new to me, superconductivity, superconducting magnets especially the cosine theta variety, cryogenics, Helium refrigeration, low temperature material properties and behavior. Alvin was the professor in a group of stand out talent and he never tired of conveying his love for physics at work and in everyday life. His lectures were like a college crash course in the fundamentals of this new (to me) science and engineering.

One of my prized possessions was a copy of Alvin's book "The Amateur Magnet Builders Handbook". All the pages were carefully written out in long hand, including the derivations of all the fundamental properties of these wonderful new accelerator magnets. Under Alvin's guidance I learned about the importance of field quality and the effect of aberrations on beam performance. Accelerator magnets have always had to have some minimal quality but we were building a brand new breed of magnets that could not only be good enough, they could actually be almost perfect. Alvin's derivations of how all the first 10 multipoles could be made to disappear by simple adjustments of just a couple, literally two parameters. The Energy Doubler magnets were the first in what would be a long line of successful SC accelerators with ever increasing field quality. Today's version of cosine theta magnets have so many parameters that they have to be adjusted by computer optimization and we owe it all to Alvin's pathfinding.

I would like to conclude with a note of personal thanks to Alvin for showing me some of his magic. His insight and lectures were the eye opener I needed. I can remember always putting in long days because the work was so stimulating and frankly so much fun. Even though I gave a lot to the endeavor I took away far more than I gave in the form of a set of career skills that sustained me thru a lifetime of service at several of our Nation's Science Labs. Thank you from the bottom of my heart Alvin. I hope I have lived up to your inspiration.