

## **Scientific autobiography. Jan Zaanen, Professor**

I started my career as a graduate student with Sawatzky in Groningen in the early 1980's. Back then photoemission was very young and my thesis was dealing with the theoretical interpretation of the spectra of transition metal salts. In hindsight, we just discovered that modulo some real world complications Hubbard models are at work: the "Zaanen-Sawatzky-Allen" classification scheme. As a lucky circumstance, just before my graduation high Tc superconductivity was discovered in copper oxides and "ZSA" brought me instantaneous some fame.

I moved on as a postdoc to the Max-Planck-Institute in Stuttgart where I landed after 6 months a tenured job. Like everybody else in this era in condensed matter physics I put all my cards on high Tc superconductivity. Among others, I figured out how to combine the wisdoms of my thesis with density-functional band structure theory in the form of LDA+U. It took some ten years to get accepted but it turned then into a mainstream method that made me into a citation billionaire. In the same era I stumbled accidentally on the wisdom that electrons in doped Mott insulators are capable of forming quite complex textures called stripes -- back then this was heresy and it took us 1.5 years to get this "Zaanen-Gunnarson" paper published.

The fatherland called me back after some four years and with help of FOM I managed to land a job at Bell labs in 1990. I lived through the last years of glory of this magnificent facility, learning more than all the years before. Unfortunately I got caught in the middle of the crash of Bell Labs in 1993, returning to Leiden with quite some damage. Van Saarloos had landed me a tenured KNAW fellowship, followed by a gradual rise in the ranks in Leiden. Not long after my return the news broke that "my" stripes had been observed experimentally by Tranquada et al., and this determined much of my agenda in the late 1990's, eventually landing me a Spinoza prize in 2006.

Inspired by the excellent environment, I developed in Leiden an appetite for high energy theory and I developed a parallel life working closely with mathematically gifted students on theoretical-theoretical physics problems. I learned GR in the process and in my late 40's I even took a thorough course in string theory. I was just done with it when in 2007 the first signals appeared for the holographic duality having dealings with condensed

matter physics. I was back then about the only professional condensed matter physicists having some clue of what string theory was about. I was cordially welcomed by the string theorists, starting a second career as a middleman between the two communities. As a lucky circumstance, Schalm who is my mirror image in the string theory community landed a chair next door in Leiden. Together we figured out the Leiden part of the "MIT-Leiden fermions" which is often seen as the real start of holography in condensed matter. Among others, we wrote together the first text book on the subject and I feel blessed to find myself towards the end of my career in a development that smells like a genuine scientific revolution of a magnitude that did not happen in physics during the last 50 years.