

Laudatio George Richard Pickett

George was born in 1939 and educated at the Magdalen College, Oxford (BA 1961; DPhil 1965) based on his thesis on properties of dilute magnetic alloys at low temperatures.

First remark on the Magdalen College, Oxford. It is founded in 1458 and becomes one of the most important Oxford colleges with a long list of famous alumni. Let me name a few: king Edward VIII (did not finish the study neither his king's duties as he abdicated because of his inappropriate marriage not suitable for the head of Anglican church), Oscar Wilde, one of the wittiest playwright and the author of important scientific discovery saying that „*teaching is admirable thing but nothing that is worth knowing can be taught*“. There was also E.T. Lawrence better known as 'Lawrence of Arabia', but also several Nobel laureates. Probably the most important for George is Sir Anthony James Leggett, a world leader in the theory of low-temperature physics, whose pioneering work on superfluidity of ^3He was recognised by the 2003 Nobel Prize in Physics.

Later in 60ties George spent as a postdoc and senior research associate 5 years at the Helsinki University of Technology in the laboratory of a godfather of ultralow temperature physics, Oli Lounasmaa. If you get fallen in love with ULT physics after today's George lecture you can read his common paper with Oli Lounasmaa in *Pokroky Matematiky, Fyziky a Astronomie*, published in 1992 with a title *Supratekuté hélium 3*.

In 1971 George Pickett arrives to the Lancaster University as a Senior fellow, Lecturer, Senior Lecturer, Reader, Professor and in 2007 as a Distinguished Professor of Low Temperature Physics (I always thought this hierarchic structure is just in France ending with *le professeur extra classe*). All George's scientific life he works on one of the most complex and intriguing quantum systems of the universe - the superfluid helium-3. In the 1996 Nobel Prize citation of physicist David Lee, credit was given to Pickett and his research group for their work on ^3He . The experimental physics of superfluid helium-3 is extremely demanding for the technique, equipment, and instrumentation which is obviously similarly the high energy colliders not commercially available but custom made in the lab. George is a pioneer in building this instrumentation who during his activity at the Lancaster University developed a new type so called Lancaster type of the nuclear demagnetization refrigerator designed for cooling the superfluid helium-3 at ultralow temperatures. In 1984 they achieved the temperature of 7 microkelvin at the stage and below 100 microkelvin in Helium-3 what is a still valid world record for the single shot demagnetization. He has also developed original

dilution refrigerators considered as the best in the world. He is often collaborating with a major manufacturer of refrigerators - the Oxford Instruments.

With the unique technique in hands George's physical interests include quantum liquids, where he discovered a new state of coherently processing domain of spins in $^3\text{He-B}$. He studies a quantum turbulence, analogues of quantum superfluidity with cosmology where he was able to prove by simulation the Kibble-Zurek mechanism of formation of topological defects in the early universe, interaction of cosmology gates and so on.

For these excellent results in 1997 George was elected a Fellow of the Royal Society. Short remark on the Royal Society of London. Obviously, this most or of one of the most important learned societies has been connected with many historical figures but Sir Isaac Newton is definitely THE chairperson of this institution. He mathematically formulated the laws of motion and universal gravitation that formed the dominant scientific framework next 200 years and influenced the industrial revolution. Newton as a true heir of Galileo Galilei based all his mathematical concepts on experimental findings, built the first practical reflecting telescope and developed a theory of colour based on the observation that a prism separates white light into the colours of the visible spectrum. He also formulated an empirical law of cooling. He was also a passionate alchemist. Attractive and repulsive forces among particles in his alchemist flask he took as an analogue of forces keeping the planets on their orbits. Simply, Newton realized the Galileo's motto „*Measure what can be measured, and make measurable what cannot be measured*“. Our laureate has certainly been a dignified follower of this excellent experimental tradition.

Beside the Royal Society, George Pickett becomes also a member of the Finnish Academy of Science and Letters, a foreign member of the Russian Academy of Sciences and since 2009 of the Learned Society of Slovakia. He was awarded by the prestigious Simon Memorial Prize, established in memory of Sir Francis Simon, former head of the Clarendon Laboratory, awarded every three years for outstanding contributions in the low-temperature field. George has published more than 200 scientific papers, incl. 7 Nature, 3 Nature Physics, and 35 Physical Review Letters, the best physical journal publishing the breakthrough results. He is devoted populariser in the magazines of Science, Nature, New Scientist, Economist but also in BBC.

Collaboration between George Pickett and the Centre of Low Temperature Physics Kosice dates back to the last years of communism, 1988, when he participated in the School of Low Temperature Physics organized by us. Our collaboration lasts until today. George has always supported by all possible means our Centre belonging to less than dozen world laboratories capable of working down to microkelvin temperatures. Thanks to his diplomatic endeavour we were privileged to organize a

prestigious world conference on Ultra Low Temperature Physics, ULT 1996 in the SAS Congress Centre in Stará Lesná. George offered us his spare helium liquefier with all infrastructure worth more than 1 million Sk till we were able to get the new one on 2005 from the Mr. Dzurinda's government. Our laboratories participated together in the project Cosmology in Laboratory led by Sir Tom Kibble, one of the world's foremost theoretical physicists and, with the Nobel laureate Peter Higgs, discoverer of the "Higgs-Kibble mechanism" for giving mass to the fundamental particles of the universe. The COSLAB conference was organized in the Smolenice castle, 2005 within the project. There was a lot of common research work. Interestingly, more people from Lancaster visited us than vice versa. We have published together more than 20 papers, incl. 3 in the Physical Review Letters. The Lancaster's group with 16 partners incl. the Kosice CLTP created in 2014 the European Microkelvin Platform which have an extensive portfolio of capacities and expertise in ultralow temperature physics. Since 2018 we are proudly running together the H2020 Excellence Science eponymous project, the European Microkelvin Platform worth more than 10 million Euro. Kosice is one of the core partners taking the highest financial share of more than 1 million. This probably the largest RIA Horizon project in Slovakia. The platform creates a distributed world's largest low temperature laboratory providing open access to its infrastructure, developing new technologies and performing joint research activities which gets recently a strong impetus with emerging quantum technologies. This contributes to the Slovak National Research Platform on Quantum Technologies established few years ago which aims at national quantum communication infrastructure. Definitely, without George Pickett it all could not happened that far.

In conclusion, I declare in the name of the Scientific Council SAS

Te, virum egregium, professorem Georgium Richardum Pickett, Sodalem Societatis Regiae, pro meritis tuis in scientiis in Slovakia promovendis afficimus titulo

Doctoris scientiarum physicalium honoris causa!