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Press release

Conference of the Bridge Forum Dialogue in cooperation with the University of Luxembourg: **'New forms of matter near absolute zero temperature'**, on 14 November 2017.

Speaker: **Professor Wolfgang Ketterle**, Professor of Physics, **Nobel Prize in Physics**, Director of Massachusetts Institute of Technology (MIT)-Harvard Center for Ultracold Atoms

Professor Ludwig Neyses, Acting Rector of the University of Luxembourg and Member of the Board of The Bridge Forum Dialogue, chaired the meeting and introduced the speaker.

Nobel laureate Wolfgang Ketterle joined the physics faculty at MIT in 1993, where he is now the John D. MacArthur Professor of Physics. He does experimental research in atomic physics and laser spectroscopy and focuses currently on Bose-Einstein condensation in dilute atomic gases. He was among the first scientists to observe this phenomenon in 1995, and realized the first atom laser in 1997. His earlier research was in molecular spectroscopy and combustion diagnostics. He received numerous and prestigious awards including: a David and Lucile Packard Fellowship (1996), the Rabi Prize of the American Physical Society (1997), the Gustav-Hertz Prize of the German Physical Society (1997), the Discover Magazine Award for Technological Innovation (1998), the Fritz London Prize in Low Temperature Physics (1999), the Dannie-Heineman Prize of the Academy of Sciences, Göttingen (1999), the Benjamin Franklin Medal in Physics (2000), and the Nobel Prize in Physics (2001, together with Eric Cornell and Carl Wieman).

A large and distinguished audience gathered to attend the conference, including several members of the scientific community, representatives from the European institutions and bodies, members of the corps diplomatique, public authorities and students.

Professor Ketterle addressed some key questions of his research in the field of fundamental physics: why do physicists freeze matter to extremely low temperatures? Why is it worthwhile to cool to temperatures, which are a billion times lower than those of interstellar space? In this speech, Professor Ketterle discussed new forms of matter, which only exist at extremely low temperatures. With the help of laser beams, gases of ultracold atoms can be transformed into metals and insulators, and recently into a 'supersolid' which is gaseous, liquid and solid at the same time.

Studies into this new form of matter could provide deeper insights into superfluids and superconductors, which are important for improvements in technologies or could lead to the discovery of new materials. "*With our cold atoms, we can understand in a deep way what is possible in nature*" explained the Nobel laureate, "*We hope to inspire further research, possibly with unanticipated results.*"

This stimulating conference was followed by a questions and answers session moderated by **Professor Ludger Wirtz**, Head of the Physics and Materials Science Research Unit at the University of Luxembourg

More information will be made available on the website of the Bridge Forum Dialogue a.s.b.l.:
www.forum-dialogue.lu.



Photo: from left to right: Prof. Ludwig Neyses, Member of the Board of The Bridge Forum Dialogue a.s.b.l, Acting Rector of the University of Luxembourg; Prof. Ketterle, Professor of Physics, Nobel Laureate in Physics, Director, MIT-Harvard Center for Ultracold Atoms