

**Jean-Pierre Bourguignon, Hon DSc**

**Monday, 16 January 2023, am**

Chancellor

Our honorary graduand this morning is the eminent French mathematician, JEAN-PIERRE BOURGUIGNON. I am delighted to introduce him to this congregation.

Jean-Pierre Bourguignon was educated in Paris, at the École Polytechnique (where he subsequently held a professorial position) and at the University Paris Diderot where he obtained his doctorate. For his entire career, he has been a Fellow of the CNRS, the Centre National de la Recherche Scientifique – France’s prestigious state research organisation. He was President of the French Mathematical Society, 1990-92 and of the European Mathematical Society, 1995-98.

Jean- Pierre has also held key positions in European institutions serving the wider scientific community. For almost 20 years, he was Director of the world-renowned Institut des Hautes Études Scientifiques near Paris, creating an invaluable environment for his subject, and providing opportunities and mentoring to young mathematicians, many of whom have gone on to be the international leaders of the field, and some of whom represent the subject at Warwick. From 2014 to 2019, he was President of the European Research Council (ERC), and was subsequently appointed its interim President (2020 – 2021).

Jean-Pierre’s field of research is Differential Geometry. Geometry has been studied for millennia, but since the invention and development of calculus by Newton and Leibniz in the 17th century it has been possible to study smoothly curved spaces. This theory of Differential Geometry was developed in the 18th and 19th centuries by Gauss, Riemann and

many others.

They discovered that curvature was an intrinsic notion that could be measured without having to consider how a space twists and bends in an ambient flat space: all that is required is a knowledge of the distance between points and the paths of shortest length that connect points. Their insights are the bedrock of Einstein's General Theory of Relativity, in which gravitation is linked to the curvature of space-time, and many other fundamental parts of physics such as Yang-Mills theory. Moreover, the ideas that have been developed in this direction are now having a profound impact across pure mathematics, solving diverse problems in other areas dating back as much as one hundred years.

Jean-Pierre has made significant contributions to Einstein metrics, Yang-Mills theory, and the study of Ricci and scalar curvatures. His work has direct relevance to the physical theories already mentioned. He is also known for his work on Dirac operators and spinors, which were originally used by Dirac in his description of the electron and which led to the prediction of the existence of antimatter.

Jean-Pierre's work has been recognised nationally and internationally. In 1987, he was awarded the Paul Langevin Prize from the Académie des Sciences de Paris, and, ten years later, the Physical Sciences and Mathematics Prize, Comité du Rayonnement Français.\* He is a foreign member of the Royal Spanish Academy of Sciences and the Portuguese Academy of Sciences. He is an honorary member of the London Mathematical Society, the German Association of Mathematicians and the Polish Mathematical Society. He holds honorary degrees from Keio University, Japan, and Nankai University, China.

Jean-Pierre's formidable scientific distinction formed the bedrock to his Presidency of the European Research Council, the ERC – arguably the most distinguished funder of frontier science globally. As Secretary-

General of The Guild of European Research-Intensive Universities, an organization in Brussels which represents 21 of Europe's most distinguished universities and whose foundation the University of Warwick inspired in 2016, I appreciated immensely Jean-Pierre's trust, his desire to work with others, and above all his infectious passion for new discoveries.

During his time at the helm of the ERC, Bourguignon managed three things: 1. He became effectively the most prominent public voice of science. He used the global stage of the Annual Davos meeting, meetings of the European parliament, and national events to articulate brilliantly why frontier research is exciting, why it is of acute societal relevance, and why it is essential to our future. His interventions, which you can still read on the [ERC's website](#), are thought-provoking, insightful, and display a deep understanding of, and passion for, all research, across Science, Technology and Medicine, as well as Social Sciences and the Humanities. 2. He fiercely guarded his scientific independence and spoke truth to power, but he did so without ever being disloyal to the Commission. Jean-Pierre was always careful to seek and sustain political allies, from the Commissioner for Research and Innovation, to state leaders like Angela Merkel, who had a high regard for him. And 3., he combined acute political understanding, scientific integrity, huge energy and a single-minded defense of the ERC – which always also included its staff – to maximise the budget for the ERC. There is no doubt in my mind that without his astute and dexterous leadership, the ERC would have been able to fund far less outstanding science. Europe's science community, and all of us who benefit from the new knowledge created by scientists funded by the ERC, are deeply indebted to him.

Chancellor, allow me to end by paraphrasing an account told by Jean-Pierre Bourguignon [in Dresden](#), delivered in his flawless German, in 2019. Jean-Pierre was raised in a large family of peasants near Lyon. His father spent five years as a German prisoner-of-war, and returned with three lessons for his son. First, having seen not only his own suffering but also that of the German population, he advised his son that 'nationalism only leads to dispute and conflict'. Second, learning his love for French

literature from fellow Russian Prisoners of war, his father realized that ‘you can always learn from others’. And third, he wanted his children to learn German, since learning other languages was the first step to achieving lasting understanding between peoples.

As Jean-Pierre noted at the end of his Dresden Speech, we all need patience to understand the lessons of the past. Deep understanding takes time and often comes from unexpected places. And that is why we need excellent frontier science. As you concluded in Dresden, Jean-Pierre, the last three years have surely affirmed that we cannot predict the future. But they have also reinforced the urgency that we can – and we must – invent it.

Chancellor: in the name of the Senate, I present to you for admission to the degree of Doctor of Science, *honoris causa*, JEAN-PIERRE BOURGUIGNO

