

LMS-IMA David Crighton Medal – Professor Frank Kelly CBE, FRS.

Short

Frank Kelly is awarded the David Crighton Medal of the LMS and IMA for services both to mathematics and to the mathematical community.

Medium

Frank Kelly is awarded the David Crighton Medal of the London Mathematical Society and the Institute of Mathematics and its Applications for services both to mathematics and to the mathematical community. Kelly's work on the fundamental properties of communication networks has had direct application to the design of telephone networks and internet protocols. The importance and impact of his work more broadly is reflected in the large number of citations his papers receive, together with the award of international prizes. He is the Head of a Cambridge college, and has chaired groups working to improve children's experience of mathematics. He has been Chief Scientific Advisor to the Government (Department of Transport) and chaired the Council for the Mathematical Sciences at an important time for the mathematics community. He was elected a Fellow of the Royal Society in 1989 and awarded a CBE in 2013.

Long

Frank Kelly is awarded the David Crighton Medal of the London Mathematical Society and the Institute of Mathematics and its Applications for services both to mathematics and to the mathematical community. He is a professor at the University of Cambridge and has been Director of the Statistical Laboratory there. He is currently Master of Christ's College, Cambridge. Kelly has made fundamental contributions to the theory of random processes, networks, control and optimization. One of his main contributions was to show that fairly simple-minded local processes could, when combined in enormous systems, act in such a way as to optimize control and fairness. His results have had major academic impact, as shown by the impressively large number of citations his work receives, and at the same time he has influenced the design of telecommunication networks and internet protocols, where his work has recently been incorporated into the design of TCP (a major internet protocol) as part of Apple's iOS7 release in 2013. Cloud computing protocols also use insight from Kelly's work. His work has been recognized through the award of numerous national and international prizes. He was elected a Fellow of the Royal Society in 1989.

Kelly has also promoted mathematical sciences outside academia and supported the mathematical sciences community in many ways. He has served on numerous advisory boards and committees, including Hewlett Packard's Basic Research Institute in Mathematical Sciences, the Council of the Royal Society, the Advisory Board of the Royal Institution/University of Cambridge Mathematics Enrichment Project, and the Management Committee of the Isaac Newton Institute for Mathematical Sciences. He chaired the Council for the Mathematical Sciences (2010-2013), the umbrella group of the Institute for Mathematics and its Applications, the London Mathematical Society, the Operational Research Society, Royal Statistical Society, and the Edinburgh Mathematical Society and was instrumental in establishing a unified voice for mathematics dialogue with Government. He was Chief

Scientific Advisor at the Department of Transport from 2003 to 2006. He was awarded the CBE for services to mathematical sciences in 2013.

These many achievements make it fitting that the IMA and LMS award him the David Crighton Medal for services both to mathematics and to the mathematical community.