



**Media release**

27 March 2007

**Embargoed until 11:00 hrs (GMT)**

## **Abel Prize 2008 – the ‘Nobel Prize’ for Mathematics**

The most important international prize for mathematics has this year been awarded jointly to two outstanding mathematicians – even though one of them was originally unable to find a publisher for his groundbreaking work.

Professor John Griggs Thompson, of Cambridge and Florida universities, and Professor Jacques Tits, of the Collège de France, have been awarded the 2008 Abel Prize by the Norwegian Academy of Science and Letters for “for their profound achievements in algebra and in particular for shaping modern group theory”.

Together, the work of Thompson and Tits forms a sort of ‘periodic table’ of groups known as the Atlas, which enables mathematicians to understand the building blocks of symmetry and break them down into the mathematical equivalent of atoms.

Ole Didrik Lærum, president of the Norwegian Academy of Science and Letters, announced the winners today. The prizes will be presented by His Majesty King Harald at the Abel Prize Award Ceremony in Oslo, May 20, 2008. At the announcement, Professor Marcus du Sautoy, a Group Theorist at the University of Oxford who has written popular books on this area of mathematics, gave a presentation on the work of the winners. He also interviewed them by phone.

He said, “This award is a celebration of the many people who have contributed to the project. Thompson and Tits are key figures in a very creative period in mathematics and without their contributions, this work would neither have begun nor been finished.”

In 1963, Thompson and colleague Walter Feit proved that all nonabelian finite simple groups were of even order – in other words, that all objects with an odd number of symmetries can be broken down into objects with a prime number of symmetries.

They wrote a seminal paper called "*Solvability of Groups of Odd Order*", which at 250 pages was possibly the longest mathematics paper in history. Consequently, it was rejected by many prestigious journals. Fortunately for modern mathematics, the *Pacific Journal of Mathematics* published it later that year, recognising its importance by dedicating a whole issue to it.

Their results stunned the world of mathematics. This was a problem that no-one had even attempted to tackle. It then led mathematicians to believe that a classification of finite simple groups might prove possible. There ensued a frenzied period of activity to classify all groups, with its almost incredible conclusion is that all finite simple groups belong to certain standard families, except for 26 'sporadic' groups. Thompson also played a key role in finding these sporadic groups and proving that there are no more.

Tits' work is complementary to that of Thompson, creating a new and highly influential vision of groups as geometric objects. This geometric approach was essential in the study and realisation of the sporadic groups.

Professor Brian Davies, President of the London Mathematical Society said, "On behalf of the LMS, we would like to congratulate the winners. Their work has been enormously important to the world of mathematics, in particular, helping the UK to establish itself as an important centre for Group Theory."

This area of Group Theory finds applications in coding, where data which has been encoded digitally can be scanned and checked for errors by analysing aspects of its symmetry. In particular, it has been used in checking the integrity of data beamed down from outer space.

The Abel Prize is worth about €750,000 (or £580,000) to the winners. It was established in 2002 by the Norwegian Academy of Science and Letters for outstanding scientific work in the field of mathematics, giving mathematics for the first time an international prize of the same scale and importance as the Nobel Prize. The award is named after Norwegian mathematician Niels Henrik Abel, the 19<sup>th</sup> century mathematician who is closely associated with Group Theory ('abelian groups' are named after him). However, he Abel's great work in the theory of equations was the last that did *not* have group theory available as a tool.

## Notes for Editors

1. The **London Mathematical Society (LMS)** is the UK's learned society for mathematics. Founded in 1865 for the promotion and extension of mathematical knowledge, the Society is concerned with all branches of mathematics and its applications. It is an independent and self-financing charity, with a membership of over 2600 drawn from all parts of the UK and overseas. Its principal activities are the organisation of meetings and conferences, the publication of periodicals and books, the provision of financial support for mathematical activities, and the contribution to public debates on issues related to mathematics research and education. It works collaboratively with other mathematical bodies worldwide. It is the UK adhering body to the International Mathematical Union and is a member of the Council for the Mathematical Sciences, which also comprises the Institute of Mathematics and its Applications and the Royal Statistical Society.
2. **JG Thompson** was born in Kansas, USA. He studied at Yale and Chicago universities and worked at Harvard and Chicago before coming to UCL in 1968 and then the University of Cambridge in 1970. He is a member of the London Mathematical Society and was awarded the Society's Senior Berwick Prize in 1982. He was awarded the Fields Medal (a prestigious international prize for mathematicians under the age of 40) in 1970. He is also a fellow of the Royal Society. At the age of 75, he is still working, dividing his time between positions at the University of Florida and the University of Cambridge.
3. **Jacques Tits** was born in Brussels, Belgium. He studied at the Free University of Brussels and worked in Brussels and Bonn before moving to the Collège de France in 1973. He became a Hardy Lecturer at the London Mathematical Society in 1983 and was made an honorary member of the Society in 1993. He is a member of many international mathematical and scientific organisations, and has received many awards for his work. At the age of 77, he is now Professor Emeritus at the Collège de France.
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