Margaret Dusa McDuff Hon DSc Warwick *oral version*

Mr Vice Chancellor, Graduates, Graduands, Ladies and Gentlemen,

We have with us today a mathematician whose work has opened a hugely fertile new branch of mathematics. She has brought symplectic geometry and topology to the attention of the mathematical world. Dusa McDuff is Professor of Mathematics at Barnard College in New York.

Born in London, Dusa grew up in Edinburgh, where her father the influential biologist C.H. Waddington was Professor of Genetics. Dusa wanted to be a mathematician from an early age. She studied in Edinburgh then Cambridge. Her doctoral work was published in the top journal Annals of Mathematics and remains important today.

Subsequently Dusa studied in Moscow with the great Russian mathematician Israel Gelfand. After various temporary posts, in 1976 she was appointed to a lectureship at Warwick. However in 1978 she moved to the State University of New York at Stony Brook. In 2007 she was appointed to the Kimmel chair at Barnard, sister college to Columbia University.

Shortly after her move to the US, Dusa's research shifted towards symplectic geometry. This subject has its origins in mechanics and continues to be important in various branches of physics. In topology the objects are flabby, and in geometry they are rigid. Symplectic geometry sits in between.

In the late 1970s symplectic geometry was beginning to develop in completely new directions, spurred by deep ideas introduced by Mikhail Gromov (one of the world's most creative living mathematicians). Over the years Dusa and her students have played a central role in developing this new field called symplectic topology. She wrote a foundational book with Dietmar Salamon, himself a former Warwick professor, which has just (in 2017) won a major prize.

With François Lalonde, Dusa wrote a series of seminal papers on symplectic energy and the stability of Hamiltonian flows.

One application is an important extension of Gromov's non-squeezing theorem, which in lay terms says that a symplectic camel is too rigid to squeeze through the eye of a needle. They also introduced a new technique called symplectic inflation. Dusa used this to produce a remarkable example of two symplectic structures in the same cohomology class that can be connected by a path of symplectic forms, but not by one staying in the same cohomology class. Among her many other contributions are fundamental results on symplectic fibrations, the Hofer metric, Hamiltonian circle actions, and the cohomology of symplectomorphism groups.

In recognition of her work, she is a member of the US National Academy of Science and has given invited addresses at both the International and European Congresses of Mathematics.

Dusa is a tremendously dynamic person with amazing energy, broad interests, original ideas, and deep insights. She has been an inspiration to generations of female mathematicians, including myself. Indeed it was Dusa who long ago encouraged me to apply for a lectureship in Warwick, thereby setting the entire course of my career. She holds an Outstanding Woman Scientist Award from the American Association for Women in Science.

Throughout her career, Professor McDuff has maintained close links with the UK. In 1994 she was elected a Fellow of the Royal Society. In 2010 she was a member of the Visiting Committee for the EPSRC International Review of Mathematics. Her many other distinctions include honorary degrees from Edinburgh and York. She is an honorary member of the London Mathematical Society, has been its Hardy Lecturer, and in 2010 won its Senior Berwick Prize.

It gives me the greatest pleasure that we add our recognition to her many honours today.

MR VICE CHANCELLOR, IN THE NAME OF THE SENATE, I PRESENT FOR ADMISSION TO THE DEGREE OF DOCTOR OF SCIENCE, HONORIS CAUSA, PROFESSOR MARGARET DUSA MCDUFF.

C.M.Series, January 2017