Ingrid Daubechies receives William Benter Prize in Applied Mathematics

Ingrid Daubechies

City University of Hong Kong (CityU) has awarded the William Benter Prize in Applied Mathematics 2018 to Ingrid Daubechies, James B. Duke Professor of Mathematics and Electrical and Computer Engineering at Duke University, for her exceptional contributions and pioneering work in a wide spectrum of scientific and mathematical subjects.

Daubechies is the first female recipient of the William Benter prize. Her work in functional analysis, particularly related to wavelets in image-compression technology, has had a profound impact in mathematics, science and engineering. The results of her work are evident in many aspects of our daily life, including digital communication systems, medical image compression, audio and videos coders, and even tools for art history and art authentication. The impact of her work is symbolic of our era.

The William Benter Prize in Applied Mathematics was set up in 2010 by the Liu Bie Ju Centre for Mathematical Sciences at CityU in honour of Mr William Benter, the donor of the prize, for his dedication and generous support for the enhancement of the University's strength in mathematics. The Prize recognises outstanding mathematical contributions that have had a direct and fundamental impact on scientific, business, finance and engineering applications. It includes a cash prize of US$100,000 and is given once every two years.

The Prize was presented to Ingrid Daubechies at the opening ceremony of the International Conference on Applied Mathematics, organised by the Liu Bie Ju Centre for Mathematical Sciences at CityU, on 4 June 2018.

Biographical Sketch

Ingrid Daubechies was born in Houthalen, Belgium. She obtained her Bachelor's degree in physics in 1975 and her PhD in 1980 from Vrije Universteit Brussel. After teaching for 12 years at her alma mater, she joined AT&T Bell Laboratories in 1987. She was a Professor of Mathematics at Rutgers University from 1991 to 1993 and moved to Princeton University in 1994. Daubechies was the first-ever female professor of mathematics at Princeton and was the William R. Kenan Jr. Professor of Mathematics from 2004 to 2010. She joined Duke University in January 2011 and is currently the James B. Duke Professor of Mathematics and Electrical and Computer Engineering.

Daubechies has received many awards and honours for her achievements and contributions over the years. She is a member of the US National Academy of Sciences, a member of the US National Academy of Engineering, and a foreign member of the French Academy of Sciences. Daubechies received two AMS Steel Prizes: one for Exposition (1994) and one for her seminal contribution to research (2011). Her monograph *Ten Lectures on Wavelets* has been cited more than 20,000 times. She was a plenary speaker at the International Congress of Mathematics in 1994 and gave the SIAM John von Neuman lecture in 2011. She received the National Academy of Sciences Award in Mathematics in 2000 and the Nemmers Prize in 2012. Daubechies was also the first female president of the International Mathematical Union from 2011 to 2014.

Citation

Over the past 20 years, digital signal processing has exploded in significance. The mobile smartphone revolution has completely changed the face of commerce, education and ultimately human culture. At the core of this revolution is the transformation of digital data from one format to another for transmission in compact forms… Daubechies' work on wavelet transforms figures prominently in the literature of compression and noise removal. Her work is truly symbolic of the technology that has enabled the massive digital media content revolution.

Daubechies' work spans an amazing breadth of scientific disciplines, with deep impacts in signal and image processing, numerical computation and data analysis.

She has made numerous other contributions to scientific and mathematical problems in a wide spectrum of subjects, ranging from computer graphics, analysis of internet traffic, machine learning and randomized algorithms to mathematical biology and functional MRI, and even mathematical tools for art history and art authentication. She is unique in her ability to penetrate a completely new subject and contribute to it in a novel and fundamental way.

– City University of Hong Kong