The Shaw Prize 2021

Prize Announcement Press Conference

Contents

Welcome Address by Professor Kenneth Young, Chairman of The Shaw Prize Council

We are pleased to bring to you the Shaw Prize Awards for 2021.

The Shaw Prize was established in the year 2002 by Mr Run Run Shaw with the support and help of Mrs Mona Shaw, and is now managed under the Shaw Prize Foundation.

Since 2004 the Prize has been awarded annually for distinguished and significant achievements in the three scientific disciplines, namely, Astronomy, Life Science and Medicine, and Mathematical Sciences. Each Prize consists of a medal, a certificate and a monetary award of US$1.2 million.

The Shaw Prize is an international award, dedicated to honouring individuals, regardless of race, nationality, gender and religious belief, who have achieved significant breakthroughs in academic and scientific research or applications, and whose work has resulted in a positive and profound impact on mankind.

Recipients of the Prize are all internationally acclaimed scholars and scientists. Thanks to the effort of members of the Selection Committees and colleagues of the Foundation, the Prize has built up its prestige worldwide within a short period of time.

We look forward to greater success of the Prize in the years to come.

1 June 2021 Hong Kong

The Shaw Prize

The Shaw Prize is an international award to honour individuals who are currently active in their respective fields and who have recently achieved distinguished and significant advances, who have made outstanding contributions in academic and scientific research or applications, or who in other domains have achieved excellence. The award is dedicated to furthering societal progress, enhancing quality of life, and enriching humanity's spiritual civilization.

Preference is to be given to individuals whose significant works were recently achieved and who are currently active in their respective fields.

Background

Established in November 2002 under the auspices of **Mr Run Run Shaw**, the Prize honours individuals, regardless of race, nationality, gender and religious belief, who have achieved significant breakthroughs in academic and scientific research or applications and whose works have resulted in positive and profound impacts on mankind.

The Shaw Prize is an international award managed and administered by The Shaw Prize Foundation based in Hong Kong. **Mr Shaw** also founded two charities, The Shaw Foundation Hong Kong and The Sir Run Run Shaw Charitable Trust, both dedicated to the promotion of education, scientific and technological research, medical and welfare services, and culture and the arts.

1 June 2021 Hong Kong

Press Release

Announcement of The Shaw Laureates 2021

The Shaw Prize in Astronomy is awarded in equal shares to

Victoria M Kaspi

Professor of Physics and Director of McGill Space Institute, McGill University, Canada and

Chryssa Kouveliotou

Professor and Chair of the Department of Physics at George Washington University, USA

for their contributions to our understanding of magnetars, a class of highly magnetized neutron stars that are linked to a wide range of spectacular, transient astrophysical phenomena. Through the development of new and precise observational techniques, they confirmed the existence of neutron stars with ultra-strong magnetic fields and characterized their physical properties. Their work has established magnetars as a new and important class of astrophysical objects.

The Shaw Prize in Life Science and Medicine is awarded to

Scott D Emr

Frank HT Rhodes Class of 1956 Professor of Molecular Biology and Genetics and Director of the Weill Institute for Cell and Molecular Biology, Cornell University, USA

for the landmark discovery of the ESCRT (Endosomal Sorting Complex Required for Transport) pathway, which is essential in diverse processes involving membrane biology, including cell division, cell-surface receptor regulation, viral dissemination, and nerve axon pruning. These processes are central to life, health and disease.

The Shaw Prize in Mathematical Sciences is awarded in equal shares to

Jean-Michel Bismut

Emeritus Professor, Mathematics Department, Université Paris-Saclay, France and

Jeff Cheeger

Silver Professor of Mathematics at the Courant Institute of Mathematical Sciences, New York University, USA

for their remarkable insights that have transformed, and continue to transform, modern geometry.

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Tuesday, 1 June 2021. At today's press conference in Hong Kong, The Shaw Prize Foundation announced the Shaw Laureates for 2021. Information was posted on the website **www.shawprize.org** at Hong Kong time 15:30 (GMT 07:30).

The Shaw Prize consists of three annual prizes: Astronomy, Life Science and Medicine, and Mathematical Sciences, each bearing a monetary award of US$1.2 million. This will be the eighteenth year of the awards.

1 June 2021 Hong Kong

Announcement

The Shaw Prize in Astronomy 2021

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for their contributions to our understanding of magnetars, a class of highly magnetized neutron stars that are linked to a wide range of spectacular, transient astrophysical phenomena. Through the development of new and precise observational techniques, they confirmed the existence of neutron stars with ultra-strong magnetic fields and characterized their physical properties. Their work has established magnetars as a new and important class of astrophysical objects.

1 June 2021 Hong Kong

Biographical Notes of Shaw Laureates in Astronomy 2021

Victoria M Kaspi was born in 1967 in Austin, Texas, USA and is currently a Professor of Physics and Director of McGill Space Institute, McGill University, Canada. She received her Bachelor's degree in Physics from McGill University in 1989 and obtained her MA and PhD in Physics from Princeton University, USA in 1991 and 1993 respectively. After positions at the California Institute of Technology, the Jet Propulsion Laboratory and the Massachusetts Institute of Technology, she then became Assistant Professor at McGill in 1999. At McGill, she held one of McGill's first Canada Research Chairs and she was named the Lorne Trottier Professor of Astrophysics in 2006. She is a member of the US National Academy of Sciences, the American Academy of Arts and Sciences and a Fellow of the Royal Society of London.

Chryssa Kouveliotou was born in 1953 in Athens, Greece and is currently a Professor and Chair of the Department of Physics at George Washington University, USA. She received her Bachelor's degree in Physics from the National and Kapodistrian University of Athens, Greece in 1975, completed an MA in Science at the University of Sussex in 1977 and obtained a PhD in Astrophysics from the Technical University of Munich, Germany in 1981. She was an Assistant Professor at the National and Kapodistrian University of Athens (1982–1994). She joined NASA Marshall Space Flight Center in 1991. In 2015, she moved to George Washington University as Professor of Physics. She is a member of the US National Academy of Sciences, the American Academy of Arts and Sciences, the Royal Netherlands Academy of Art and Sciences and the Academy of Athens, Greece.

1 June 2021 Hong Kong

The Shaw Prize in Astronomy 2021

Press Release

The Shaw Prize in Astronomy 2021 is awarded in equal shares to **Victoria M Kaspi**, Professor of Physics and Director of McGill Space Institute, McGill University, Canada and **Chryssa Kouveliotou**, Professor and Chair, Department of Physics at George Washington University, USA for their contributions to our understanding of magnetars, a class of highly magnetized neutron stars that are linked to a wide range of spectacular, transient astrophysical phenomena. Through the development of new and precise observational techniques, they confirmed the existence of neutron stars with ultra-strong magnetic fields and characterized their physical properties. Their work has established magnetars as a new and important class of astrophysical objects.

Neutron stars are the ultra-compact remnants of stellar explosions. Most are rapidly rotating with periods of milli-seconds to seconds, and emit powerful beams of electromagnetic radiation (observed as pulsars). As such they are accurate "cosmic clocks" that enable tests of fundamental physics in the presence of a gravitational field many billion times stronger than that on Earth. As a result, the Nobel Prize in Physics has been awarded twice for work on pulsars (1974 and 1993).

Pulsars also have strong magnetic fields, since the magnetic field lines in the progenitor star are "frozen in" in the stellar remnant as it collapses to become a neutron star. These magnetic fields funnel jets of particles along the magnetic poles, but classical radio pulsars are powered mainly by rotational energy and slowly spin down over their lifetimes.

The research of **Kaspi** and **Kouveliotou** was motivated by the theoretical prediction (Duncan & Thompson 1992) that neutron stars with extreme magnetic fields up to a thousand times stronger than those in regular pulsars could form if dynamo action would be efficient during the first few seconds after gravitational

collapse in the core of the supernova. Such objects (termed "magnetars") would be powered by their large reservoirs of magnetic energy, not rotation, and were predicted to produce highly-energetic bursts of gamma-rays through generation of highly energetic ionized particle pairs at their centres.

From observations of a class of X-ray/γ-ray sources called "soft gamma-ray repeaters" (SGRs) **Chryssa Kouveliotou** and her colleagues in 1998/99 established the existence of magnetars and provided a stunning confirmation of the magnetar model. By developing new techniques for pulse timing at X-ray wavelengths and applying these to data from the Rossi X-ray timing satellite (RXTE), **Kouveliotou** in 1998 was able to detect X-ray pulses with a period of 7.5 seconds within the persistent X-ray emission of SGR 1806-20. She then measured a spin-down rate for the pulsar, and derived both the pulsar age and the dipolar magnetic field strength — which lay within the range of values predicted for magnetars, close to 10^{14} gauss (10^{10} T). The spin-down measurements were extremely challenging because of the faintness of the pulsed signal and the need to correct the rotation phase across multiple epochs.

Victoria Kaspi showed that a second class of rare X-ray emitting pulsars, the "anomalous X-ray pulsars" (AXPs), were also magnetars (Gavriil et al. 2002). **Kaspi** took the techniques used by radio astronomers to maintain phase coherence in pulsar timing and adapted them to work in the much more challenging X-ray domain. This allowed her to make extremely accurate timing measurements of X-ray pulsars with full phase coherence across intervals of months to years, and hence to measure spin-down rates far smaller than those seen in SGR 1806-20. **Kaspi** has also made fundamental contributions to the characterization of magnetars as a population, through the elucidation of their physical properties and their relationship to the classical radio pulsars (Olausen & **Kaspi** 2014). Her work has cemented the recognition of magnetars as a distinct source class. Today, magnetars are routinely invoked to explain the

physics underlying a diverse range of astrophysical transients including γ-ray bursts, superluminous supernovae and nascent neutron stars.

Magnetars probe extreme physical conditions inaccessible on Earth, such as strong gravity, ultra-nuclear densities and the strongest magnetic fields in the Universe. In this high energy environment particle-anti-particle pairs are created from the vacuum, and unique tests of general relativity and quantum electrodynamics become possible. In 2020/2021, the first associations of a Galactic magnetar with milli-second duration outbursts of radio emission, so called Fast Radio Bursts (FRBs), were established (CHIME/FRB et al. 2020, Younes et al. 2021). These results may suggest that "flaring" magnetars are the central engines of at least some of the spectacular extragalactic FRBs. Future studies will undoubtedly shed further light on these exciting discoveries.

The Shaw Prize 2021 recognizes the seminal contributions of **Victoria M Kaspi** and **Chryssa Kouveliotou** to the understanding of the enigmatic properties of magnetars, pulsars and γ-ray bursts.

Astronomy Selection Committee
The Shaw Prize

1 June 2021 Hong Kong

Announcement

The Shaw Prize in Life Science and Medicine 2021

is awarded to

Scott D Emr

for the landmark discovery of the ESCRT (Endosomal Sorting Complex Required for Transport) pathway, which is essential in diverse processes involving membrane biology, including cell division, cell-surface receptor regulation, viral dissemination, and nerve axon pruning. These processes are central to life, health and disease.

Biographical Note of Scott D Emr

Scott D Emr was born in 1954 in Jersey City, New Jersey, USA and is currently Frank HT Rhodes Class of 1956 Professor of Molecular Biology and Genetics and Director of the Weill Institute for Cell and Molecular Biology, Cornell University, USA. He received his PhD in Molecular Genetics from Harvard Medical School, USA in 1981. He was a Miller Research Scholar at the University of California, Berkeley, USA (1981–1983). He then worked at the California Institute of Technology, USA, where he was successively Assistant Professor and Associate Professor (1983–1991). Prior to joining the faculty at Cornell, he was a Distinguished Professor at the School of Medicine, University of California, San Diego, USA and an Investigator of the Howard Hughes Medical Institute (1991–2007). He is a member of the US National Academy of Sciences and the American Academy of Arts and Sciences.

1 June 2021 Hong Kong

The Shaw Prize in Life Science and Medicine 2021

Press Release

The Shaw Prize in Life Science and Medicine 2021 is awarded to **Scott D Emr**, Frank HT Rhodes Class of 1956 Professor of Molecular Biology and Genetics and Director of the Weill Institute for Cell and Molecular Biology, Cornell University, USA for the landmark discovery of the ESCRT (Endosomal Sorting Complex Required for Transport) pathway, which is essential in diverse processes involving membrane biology, including cell division, cell-surface receptor regulation, viral dissemination, and nerve axon pruning. These processes are central to life, health, and disease.

For life to be possible, cells must put particular bio-components in the proper location and at the proper time. Here is where this year's Shaw Laureate in Life Science and Medicine, **Scott Emr**, comes in. **Emr** made seminal discoveries in the field of intra-cellular vesicle trafficking. Vesicles are small membrane-bound, fluid-filled sacs that transport bio-components to different destinations inside cells. The destinations are called organelles, which are membrane-bound entities responsible for distinct cellular functions. In a landmark series of studies, **Emr** used elegant genetic strategies that enabled him to identify 40 genes that encode the components of the so-called ESCRT pathway (ESCRT stands for Endosomal Sorting Complex Required for Transport). **Emr** combined molecular, biochemical, and structural approaches to characterize the 40 ESCRT proteins and to elucidate their individual and combined roles. His work revealed that ESCRT is a bio-machine that interacts with vesicles harbouring newly synthesized proteins and ensures that the vesicles and their cargos are selectively trafficked to distinct subcellular organelles. Central to this work was **Emr**'s discovery of an enzyme, a lipid kinase, that converts the lipid molecule called phosphatidylinositol to phosphatidylinositol-3-phosphate. By studying this enzyme and the lipids involved, **Emr** recognized that different lipids function as specific organelle "addresses" that determine the destination to which particular bio-components are delivered. Conversion of one phosphoinositide into another underlies recognition of the

organelle membrane surface by the ESCRT pathway. Thus, these lipid "addresses" dictate the precise, sequential progression of vesicle transport from one organelle destination to the next. Remarkably, it takes five ESCRT sub-complexes for full transport between the various vesicle destinations. **Emr** systematically defined the components in each of five functionally distinct ESCRT machines and characterized the jobs performed by all five in an assembly line-like pathway. Another groundbreaking discovery concerns **Emr**'s work showing that the ESCRT pathway recognizes a so-called ubiquitin tag on proteins destined to be packaged into vesicles and subsequently targeted to a specialized cellular compartment for destruction. This is a process that is essential for the normal turnover of receptor proteins in cells. In dogma-overturning work, **Emr** discovered and elucidated that the ESCRT machinery bends vesicle membranes inward and away from the cell cytoplasm. Inward membrane bending enables formation of unique vesicular structures possessing the opposite topology of other well-known subcellular organelles. ESCRT-directed bending of membranes is now accepted as a universal mechanism widely used by cells. Indeed, membrane bending is crucial for many vital processes including the regulation of signaling by cell surface receptors, the separation of daughter cells during cell division, the budding of viruses like HIV from a host cell, allowing the spread of infection to new cells, and for the pruning of neuronal axons, a requirement for normal brain development. Mutations in the ESCRT pathway have been shown to produce profound defects in development, resulting in embryonic lethality, in some cases due to inability to turn off signaling from cell surface receptors such as Notch. In summary, **Scott Emr** has transformed our understanding of the pathways and mechanisms involved in membrane trafficking, a process that is central to life, from yeast to humans.

Life Science and Medicine Selection Committee
The Shaw Prize

1 June 2021 Hong Kong

Announcement

The Shaw Prize in Mathematical Sciences 2021

is awarded in equal shares to

Jean-Michel Bismut

and

Jeff Cheeger

for their remarkable insights that have transformed, and continue to transform, modern geometry.

1 June 2021 Hong Kong

Biographical Notes of Shaw Laureates in Mathematical Sciences 2021

Jean-Michel Bismut was born in 1948 in Lisbon, Portugal and is currently Emeritus Professor, Mathematics Department, Université Paris-Saclay, France. He graduated from École Polytechnique, France and earned his PhD in Mathematics in 1973 from the Université Paris VI, France. He was an Engineer of the Corps des Mines in France (1970–1976) and a Lecturer at École Polytechnique (1975–1987). He worked at the Department of Mathematics of Université Paris Sud since 1976 where he was successively Associate Professor (1976–1980), Professor (1981–2017) and Emeritus Professor (2017–). He is a member of the French Academy of Sciences.

Jeff Cheeger was born in 1943 in Brooklyn, New York City, USA and is currently Silver Professor of Mathematics at the Courant Institute of Mathematical Sciences, New York University, USA. He obtained his Bachelor's degree from Harvard University, USA in 1964 and received his MS and PhD in Mathematics from Princeton University, USA in 1966 and 1967 respectively. He was a postdoctoral fellow and instructor at National Science Foundation (1967–1968). After working at the University of Michigan, USA as an Assistant Professor (1968–1969), he joined the faculty of the State University of New York, Stony Brook, USA where he was successively Associate Professor (1969–1971), Professor (1971–1985), Leading Professor (1985–1990) and Distinguished Professor (1990–1992). He has been Professor at New York University since 1989. He is a member of the US National Academy of Sciences, American Academy of Arts and Sciences, and the Finnish Academy of Science and Letters.

2 July 2021 Hong Kong (Revised)

The Shaw Prize in Mathematical Sciences 2021

Press Release

The Shaw Prize in Mathematical Sciences 2021 is awarded in equal shares to **Jean-Michel Bismut**, Emeritus Professor, Mathematics Department, Université Paris-Saclay, France and **Jeff Cheeger**, Professor of Mathematics at the Courant Institute of Mathematical Sciences, New York University, USA for their remarkable insights that have transformed, and continue to transform, modern geometry.

Geometry is one of the oldest branches of mathematics, going back to the Greeks and beyond. A famous problem left open by the Greeks and not resolved until the 19th century was whether the parallel postulate, which states that, for two dimensions, given a line and a point not on that line, there is exactly one line through the point that does not meet the first line, could be deduced from Euclid's other axioms. It was shown by Gauss, Bolyai and Lobachevsky that the answer was no, and that there are different geometries that are mathematically consistent in which the other axioms hold but the parallel postulate does not. Moreover, these non-Euclidean geometries, far from being mere curiosities, are fundamental to modern mathematics.

From these ideas, thanks in particular to the work of Riemann, the concept of a manifold became central to geometry. A manifold can be thought of as a higher-dimensional generalization of the notion of a surface in three-dimensional space (though a manifold is often better thought of "intrinsically" rather than with reference to a larger space in which it lives). Manifolds are ubiquitous in mathematics and physics, and their study has led to remarkable developments and many fascinating open problems.

One of these developments is the realization that global topological quantities of a manifold can often be computed using local tools. For example, a famous theorem of Gauss and Bonnet shows that the number of "holes" a surface has (where, for

instance, a doughnut has one hole, the surface of a pretzel in the shape of figure-of-8 has two, and so on), can be obtained by integrating a local quantity, the curvature, over the surface. This idea has subsequently been vastly generalized, a particular highlight being the famous Atiyah–Singer index theorem from 1963. This theorem led to an entire subfield of mathematics devoted to index theory.

Bismut has played a central role in this subfield. In the early part of his career, he made profound contributions to probability theory that have had a major impact on the theory of mathematical finance. Later, he imported ideas from probability into index theory, reproving all the main theorems and vastly extending them, which enabled him to link index theory to other parts of mathematics. This has led to many applications in areas as far afield as Arakelov geometry, which is used in number theory to study high-dimensional Diophantine equations, and physics, where the tools developed by **Bismut** have been used to compute the genus 1 Gromov–Witten invariant. In recent years, his work has been changing the way we think about the Selberg trace formula, a fundamental tool in representation theory and modern number theory. A common feature of all his works is that using index theory he is able to prove explicit formulas for quantities that people would previously never have dared to try to compute.

A major theme of modern geometry, to which **Cheeger** has made profound contributions, is to understand the impact of curvature conditions on the structure of manifolds. His work in this area has had a huge impact — for example, Perelman made essential use of it in his solution of the Poincaré conjecture. He is also a household name in combinatorics and theoretical computer science owing to his introduction of what we now call the **Cheeger** constant. This is the smallest area of a hypersurface that divides a manifold into two parts, which **Cheeger** related to the first non-trivial eigenvalue of the Laplace–Beltrami operator on that manifold. A discrete analogue of this result for graphs has played an extremely important role in the study of random walks on graphs, which in turn has led to the

development of profound algorithms for random sampling, integration in high dimensions, and many other applications.

Bismut and **Cheeger** have also worked together, and are particularly celebrated for their extension of a famous invariant, the so-called eta invariant, from manifolds to families of manifolds, which allowed them to compute explicitly the limit of the eta invariant along a collapsing sequence of spaces.

More generally, over the last few decades, including right up to the present day, **Bismut** and **Cheeger**, as well as solving long-standing open problems, have introduced important new ideas and built tools that have greatly extended the range of what is possible in modern geometry, and as a result have transformed the subject.

Mathematical Sciences Selection Committee
The Shaw Prize

1 June 2021 Hong Kong

The Shaw Prize
2021

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The Shaw Prize

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Mr Raymond Chan

Professor Wai-Yee Chan

Professor Pak-Chung Ching

Professor Frank H Shu

Members' Biographical Notes

Professor Kenneth Young is Chairman of the Council and Vice Chairman of the Board of Adjudicators of The Shaw Prize, and Emeritus Professor of Physics at The Chinese University of Hong Kong.

Mr Raymond Chan is Member of Board of Advisor of The Sir Run Run Shaw Charitable Trust, Chairman of The Shaw Foundation and The Shaw Prize Foundation and Managing Director of Shaw Group of Companies.

Professor Wai-Yee Chan is Pro-Vice-Chancellor / Vice-President, Li Ka Shing Professor of Biomedical Sciences and Director of the Institute for Tissue Engineering and Regenerative Medicine, The Chinese University of Hong Kong.

Professor Pak-Chung Ching is Director of Shun Hing Institute of Advanced Engineering and Choh-Ming Li Research Professor of Electronic Engineering at The Chinese University of Hong Kong.

Professor Frank H Shu is Chairman of the Board of Adjudicators of The Shaw Prize and Professor Emeritus of Physics at the University of California, San Diego, USA.

1 June 2021 Hong Kong

The Shaw Laureates *(2004 – 2021)*

YEAR	Astronomy	Life Science and Medicine	Mathematical Sciences
2004	P James E Peebles (*USA*)	*Two prizes awarded:* (1) Stanley N Cohen (*USA*) Herbert W Boyer (*USA*) Yuet-Wai Kan (*USA*) (2) Richard Doll (*UK*)	Shiing-Shen Chern (*China*)
2005	Geoffrey Marcy (*USA*) Michel Mayor (*Switzerland*)	Michael Berridge (*UK*)	Andrew John Wiles (*UK*)
2006	Saul Perlmutter (*USA*) Adam Riess (*USA*) Brian Schmidt (*Australia*)	Xiaodong Wang (*USA*)	David Mumford (*USA*) Wentsun Wu (*China*)
2007	Peter Goldreich (*USA*)	Robert Lefkowitz (*USA*)	Robert Langlands (*USA*) Richard Taylor (*UK*)
2008	Reinhard Genzel (*Germany*)	Ian Wilmut (*UK*) Keith H S Campbell (*UK*) Shinya Yamanaka (*Japan*)	Vladimir Arnold (*Russia*) Ludwig Faddeev (*Russia*)
2009	Frank H Shu (*USA*)	Douglas L Coleman (*USA*) Jeffrey M Friedman (*USA*)	Simon K Donaldson (*UK*) Clifford H Taubes (*USA*)
2010	Charles L Bennett (*USA*) Lyman A Page Jr (*USA*) David N Spergel (*USA*)	David Julius (*USA*)	Jean Bourgain (*USA*)
2011	Enrico Costa (*Italy*) Gerald J Fishman (*USA*)	Jules A Hoffmann (*France*) Ruslan M Medzhitov (*USA*) Bruce A Beutler (*USA*)	Demetrios Christodoulou (*Switzerland*) Richard S Hamilton (*USA*)
2012	David C Jewitt (*USA*) Jane Luu (*USA*)	Franz-Ulrich Hartl (*Germany*) Arthur L Horwich (*USA*)	Maxim Kontsevich (*France*)
2013	Steven A Balbus (*UK*) John F Hawley (*USA*)	Jeffrey C Hall (*USA*) Michael Rosbash (*USA*) Michael W Young (*USA*)	David L Donoho (*USA*)
2014	Daniel Eisenstein (*USA*) Shaun Cole (*UK*) John A Peacock (*UK*)	Kazutoshi Mori (*Japan*) Peter Walter (*USA*)	George Lusztig (*USA*)
2015	William J Borucki (*USA*)	Bonnie L Bassler (*USA*) E Peter Greenberg (*USA*)	Gerd Faltings (*Germany*) Henryk Iwaniec (*USA*)
2016	Ronald W P Drever (*UK*) Kip S Thorne (*USA*) Rainer Weiss (*USA*)	Adrian P Bird (*UK*) Huda Y Zoghbi (*USA*)	Nigel J Hitchin (*UK*)
2017	Simon D M White (*Germany*)	Ian R Gibbons (*USA*) Ronald D Vale (*USA*)	János Kollár (*USA*) Claire Voisin (*France*)
2018	Jean-Loup Puget (*France*)	Mary-Claire King (*USA*)	Luis A Caffarelli (*USA*)
2019	Edward C Stone (*USA*)	Maria Jasin (*USA*)	Michel Talagrand (*France*)
2020	Roger D Blandford (*USA*)	Gero Miesenböck (*UK*) Peter Hegemann (*Germany*) Georg Nagel (*Germany*)	Alexander Beilinson (*USA*) David Kazhdan (*Israel*)
2021	**Victoria M Kaspi** (*Canada*) **Chryssa Kouveliotou** *(USA)*	**Scott D Emr** (*USA*)	**Jean-Michel Bismut** (*France*) **Jeff Cheeger** (*USA*)

Note: Award may not be shared equally. For details, please refer to Announcement and Citation on the Shaw Prize website (www.shawprize.org)
Countries mentioned above refer to the sites of the work places of the Laureates at the time of the award.