

Chern Centennial

CONFERENCE

Shiing-Shen Chern's Centennial Birthday Conference

Sunday, October 30 to
Friday, November 4, 2011

MSRI, in conjunction with the Chern Institute of Mathematics (CIM) at Nankai University in Tianjin, China, is planning a conference to celebrate the centennial of the birth of Shiing-Shen Chern (1911, Jiaxing, China–2004, Tianjin, China) one of the greatest geometers of the 20th century. The two-part conference will be held at both locations: October 23–29, 2011 (Sunday–Saturday) at CIM and October 30–November 4, 2011 (Sunday–Friday) at MSRI. Highlights of the conference in Berkeley include the unveiling of a new statue of Professor Chern, who was a cofounder of MSRI and its first director, to be installed in a new contemplative bosque in front of the Institute; the premiere of a biographical film about Chern's life and career; and a Chinese banquet in his honor, fittingly held at his favorite restaurant, East Ocean Seafood Restaurant, which has a scenic view from its East Bay shoreline location in Emeryville.

Jim Simons, who collaborated with Professor Chern and co-authored with him a landmark 1974 paper that was the basis for the nowadays-central Chern-Simons theory, is a special invited speaker, as is C.-N. Yang, a student of Chern's who went on to win the Nobel Prize in Physics. The areas in which Chern worked will be addressed in talks at both conference locales. These areas (listed with the chair of the subcommittee) are: Global differential geometry (topology, characteristic classes, etc.), Jean-Pierre Bourguignon; Complex differential geometry (Kähler geometry, etc.), Gang Tian; CR geometry and Geometric PDEs, Charles Fefferman; Symplectic and Finsler Geometry, Yiming Long and Alan Weinstein; Integral Geometry, Simon Gindikin; and Exterior Differential Systems and the Method

of Equivalence, Robert Bryant. The chairs of the Academic Committee are Phillip Griffiths (IAS) and Wentsun Wu. The chairs of the Organizing Committee are Yiming Long (CIM) and Robert Bryant (MSRI). The chair of the Scientific Program Committee is Phillip Griffiths.



Shiing-Shen Chern and Deng Xiaoping

Chern was a towering figure, one of the foundational leaders of 20th century mathematics. Professor Chern published over a span of six decades. He devoted his life to mathematics, both in active research and education, a calling that inspired generations of students he nurtured and culminated in a genius for galvanizing the support to found math institutes, in the United States and his homeland, China—MSRI and CIM, respectively.

Following a classical Chinese upbringing, Chern pursued mathematical studies in Hamburg and the Sorbonne in Paris, obtaining his doctorate from Hamburg in 1936. He became known for building on the work of Élie Cartan, the leading differential geometer of the 1930s. Chern accepted a position as professor of mathematics at Tsinghua University in 1937; however, he never reached Beijing as the Sino-Japanese war broke out and diverted him to a temporary university in

For more information, please visit

www.msri.org/chernconference

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Changsha and then Kunming until 1943, when he left to study at the Institute for Advanced Study (IAS) in Princeton, NJ. He returned again in 1945 to China, where he set about creating a mathematics institute for the Academia Sinica, first in Shanghai and then in Nanking. As the Chinese civil war approached Nanking, his friends arranged for the IAS to offer him a second position that brought him back to the United States. During and after World War II, he traveled between the IAS and China until he secured an appointment at the University of Chicago following the Communist takeover of China in 1949. In 1960, he accepted an appointment at UC Berkeley, where he created a center of geometry, and, in 1981, co-founded the Mathematical Sciences Research Institute (jointly with Calvin Moore and Isadore Singer) and served as director (1981–84).

During the 1980s, Chern's world-renowned stature in mathematics earned the respect of the Chinese leaders who came to power following Mao-tse-Tung, particularly Deng Xiaoping and Jiang Zemin. With their full support, Chern was able to revive research mathematics in China, producing a new generation of talented Chinese mathematicians. Several major figures in mathematics, such as Gang Tian and Shing-Tung Yau, consider Chern to be the mentor who helped them study in Western countries following the thawing of the Cultural Revolution, which had closed Chinese universities and suppressed academic pursuits. Indeed, mathematicians throughout present-day China have all been beneficiaries of Chern's influence, vision and foresight. By the 1980s, Chern had become a celebrity in China; every school child knew his name, and TV cameras followed him when he ventured forth from the institute in Tianjin. In 1986, with the backing of the Chinese government, he created the Nankai Institute of Mathematics at Nankai University. Today, it is called the Chern Institute of Mathematics.

Though Chern moved back to China permanently from Berkeley in 1999, he remained a strong supporter of MSRI. His major gift sparked MSRI's successful campaign to expand its building, which was named Shiing-Shen Chern Hall, in his honor. When Chern was awarded the prestigious Shaw Prize for Mathematics in 2004, from the \$1 million proceeds he gave another large gift to MSRI. Shortly before Professor Chern died in Tianjin, he lived to see his legacy blaze yet another trail when the International Astronomical Union named an asteroid after him.

MSRI gratefully acknowledges the Simons Foundation for its generous underwriting of the Chern Centennial conference at MSRI.

Taking the Long View: The Life of Shiing-Shen Chern

George Paul Csicsery has produced and directed a new biographical film that highlights the remarkable achievements of the eminent mathematician Shiing-Shen Chern, who was a co-founder of MSRI and the Institute's first director. The documentary *Taking the Long View* has incorporated "an abundance of stills, archival footage, and stories" told in interviews with friends, family, and many prominent colleagues who wanted to share their insights to create a vivid portrait of Chern "as a gesture of giving back to him some of what he gave them," said Csicsery. Fortunately, Csicsery had filmed a discussion with S.-S. Chern at MSRI back in 2000, at the prescient request of David Eisenbud, then director of the Institute, and that footage has been used for the first time in the film. Csicsery noted that people he interviewed across the country—in Berkeley, at MIT, in New York and Princeton—all stressed "two things about Chern beyond his considerable mathematical achievements. He was a devotee of Chinese classical culture and had deep-seated patriotic feelings for China." The relationship between Chern and his native China was profoundly reciprocated according to Csicsery, who remarked "The reverence with which Chern is regarded in China today... helped me cast him as a traditional Chinese sage in the modern world."



Shiing-Shen Chern in the Director's office at MSRI

Shiing-Shen Chern is one of the fathers of modern differential geometry; he introduced the now-ubiquitous Chern classes, among other important contributions. He also helped renew research mathematics in China during the 1980s and arranged for talented Chinese scholars to study in the United States and Europe, as well as for mathematicians from the West to present their work in China. *Taking the Long View* reflects upon Chern's accomplishments, relationships, and charismatic personality, a presence of true "gravitas" that allowed him to build bridges between China and the West.



Chern with Jiang Zemlin

Taking the Long View (2010), a 16-minute video, is the first of two documentaries about Chern that have been commissioned by MSRI. The film premiered at the International Congress of Mathematics (ICM) held in Hyderabad, India, on August 20, 2010, as part of the inaugural presentation of the first Chern Medal. A second, longer biographical film will debut at Chern's 100th birthday celebration conference in Berkeley and Tianjin in October 2011.

Taking the Long View is available for downloading from the MSRI website's VMath archive at <http://www.msri.org/web/msri/online-videos>. The film was made with support from the Simons Foundation. For more information about the film and its making, please go to www.takingthelongviewfilm.com.

Chern Medal

The International Mathematical Union (IMU) and the Chern Medal Foundation (CMF) have launched a major new international prize in mathematics, the Chern Medal Award, in memory of the distinguished mathematician Shiing-Shen Chern (1911–2004). According to the Award's guidelines, "the Chern Medal is to be awarded to an individual whose accomplishments warrant the highest level of recognition for outstanding achievements in the field of mathematics."

The first Chern Medal was presented to Louis Nirenberg of the Courant Institute of Mathematical Sciences, New York University, at last year's 2010 International Congress of Mathematicians in Hyderabad, India, on August 20.



The award ceremony included an overview of the Professor Nirenberg's achievements in a public presentation. The medal will be awarded every four years at the quadrennial ICMs.

The Award consists of a medal and a monetary prize of \$500,000, half of which shall be donated to organizations of the recipient's choice to support research, education or other outreach programs in the field of mathematics. Since Professor Chern was generous during his lifetime in his support of the field, the introduction by the IMU and CMF of an "Organization Award" as part of the prize sets an example of philanthropy in promoting mathematics that is in keeping with Chern's own private practice and is a standard for mathematicians to continue Chern's legacy of personal generosity. In contrast to the Fields Medal and Nevanlinna Prize, which are awarded by the IMU to young researchers under 40 years old, the Chern Medal Award has no age limitation and seeks to recognize long-term work with outstanding theoretical consequences.

The Chern Medal Foundation was established by contributions from the S.-S. Chern Foundation for Mathematical Research and the Simons Foundation to create and fund the Chern Medal Award.