# Presentation of the Fields Medals and a Special Tribute

BY

Yuri I. Manin

Chairman of the Fields Medal Committee

I would like to thank our hosts for their hospitality and the efforts they invested in the organization of this Congress.

The international community of mathematicians, amply represented here, never bothered much about self-definitions. If pressed, I would choose as such Georg Cantor's famous motto:

*Das Wesen der Mathematik liegt in ihrer Freiheit*
–The essence of mathematics is its freedom–
–Суть математики – свобода–

## Fields Medal and Prize

Now we turn to the award of Fields Medals and a special tribute.

The history of the Fields Prize goes back to 1924, when the President of the International Congress of Mathematicians in Toronto, Professor John Charles Fields, suggested to establish two gold medals, to be awarded for outstanding discoveries in mathematics. His proposal was accepted by the Zürich Congress in 1932, and the first medals were given at the Oslo Congress 1936. Starting with the Harvard Congress in 1950, two, and after 1966 two to four medals were awarded at every successive ICM.

When Fields expounded his vision of the prize, he brought up two important issues. He wanted it to be "of a character as purely international and impersonal as possible." And he wished it to be given "in recognition of work already done" and also as "an encouragement for further achievement on the part of recipients and a stimulus to renewed efforts on the part of others."

The designer of the medal did his best in order to express symbolically Professor Fields' first wish. You can see the result of his efforts, complete with Latin inscriptions and their translation. In particular, Fields' name does not appear on the medal.

As for the second point, the words "encouragement for further achievement" were taken to mean that the recipients must be reasonably young.


*Fields Medal*

## COMMITTEE '98

The Fields Medal Committee '98 appointed by the Executive Committee of the International Mathematical Union consisted of Professors John Ball, John Coates, J. J. Duistermaat, Michael Freedman, Jürg Fröhlich, Robert MacPherson, Kyoji Saito, Steve Smale, and myself as chairman. Since this was to be the last International Congress of Mathematicians before the year 2000, we felt somewhat like a collective Santa Claus of the swiftly expiring millennium.

As all the Committees before us, we tried to select the most daring, profound, and stimulating research done by young mathematicians.

As all the Committees before us, we agreed, not without hesitations and doubts, to follow the established tradition and to interpret the word "young" as "at most forty in the year of the Congress."

## PRIZE WINNERS

The selection process involved long deliberations and difficult choices. We acknowledge with gratitude the assistance of many colleagues who helped us to reach the unanimous decision to award four Fields Medals to the following mathematicians (in alphabetical order):

RICHARD BORCHERDS,

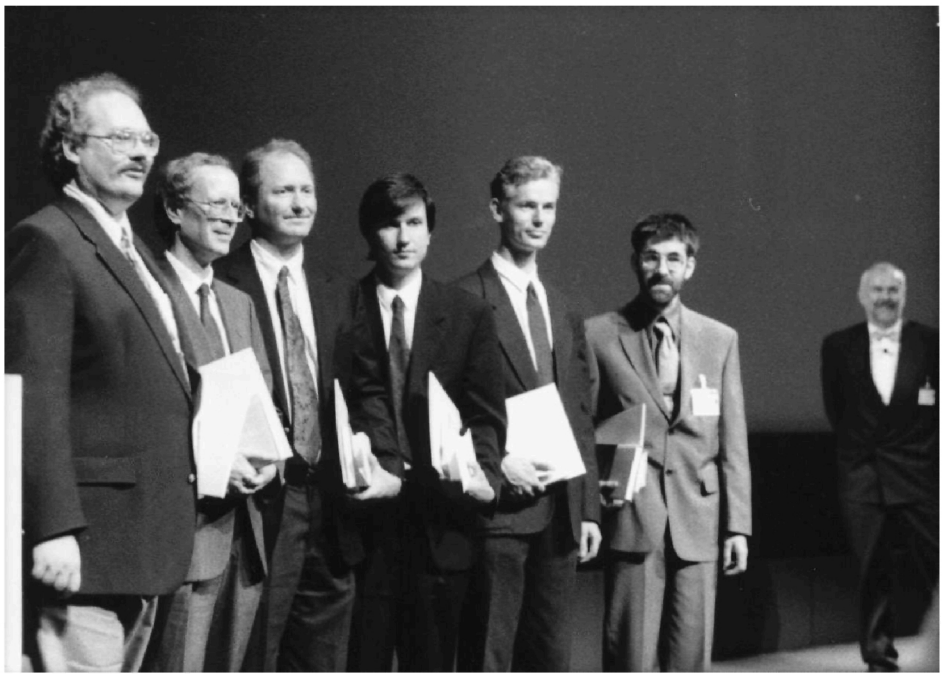
WILLIAM TIMOTHY GOWERS,

MAXIM KONTSEVICH,

CURTIS MCMULLEN.

A special tribute of the Executive Committee of the IMU is awarded to

ANDREW WILES.



*Shor, Wiles, McMullen, Kontsevich, Gowers, Borcherds*

On behalf of the Committee, I offer to all of them our warmest congratulations. The work of the Prize winners which won the international recognition will be described in more detail at the afternoon session.

Before we start the awarding ceremony, I would like to invoke a personal recollection. Many years ago a friend of mine was going abroad to receive his first international prize. He was excited, delighted, and worried about the proper behavior on such occasion. So we decided to consult the great book by the great wise Miss Manners, treating all sorts of good manners in difficult situations.

With initial surprise turning to admiration, we learned that Miss Manners reserved her most enlightening suggestion not for the award winners, but for all of us present at the ceremony, who don't get any prizes this time.

Her advice was: "Take it easy, have fun and enjoy your life!"

RICHARD BORCHERDS

For his contributions to algebra, the theory of authomorphic forms, and mathematical physics, including the introduction of vertex algebras and Borcherds' Lie algebras, the proof of the Conway-Norton moonshine conjecture and the discovery of a new class of automorphic infinite products.

WILLIAM TIMOTHY GOWERS
For his contributions to functional analysis and combinatorics, developing a new vision of infinite-dimensional geometry, including the solution of two of Banach's problems and the discovery of the so called Gowers' dichotomy: every infinite dimensional Banach space contains either a subspace with many symmetries (technically, with an unconditional basis) or a subspace every operator on which is Fredholm of index zero.

MAXIM KONTSEVICH
For his contributions to algebraic geometry, topology, and mathematical physics, including the proof of Witten's conjecture of intersection numbers in moduli spaces of stable curves, construction of the universal Vassiliev invariant of knots, and formal quantization of Poisson manifolds.

CURTIS MCMULLEN
For his contributions to the theory of holomorphic dynamics and geometrization of three-manifolds, including proofs of Bers' conjecture on the density of cusp points in the boundary of the Teichmüller space, and Kra's theta-function conjecture.

ANDREW WILES
I am happy to announce that the Executive Committee of the IMU decided to produce a commemorative silver plaque as a special tribute given to Andrew Wiles on the occasion of his sensational achievement.

Everybody knows what Andrew Wiles proved. I will say it in Pierre Fermat's own words:

> *"[...] nullam in infinitium ultra quadratum potestatem in duas ejusdem nominis fas est dividere."*

Unfortunately this plaque is too small to write Wiles' proof down.