

## The Year of Mathematics in Germany

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The year 2008 was the “Year of Mathematics” in Germany. Generally it is considered as a great success. Several hundred people contributed with an abundance of original ideas, one cannot aim at a complete description of all the activities which have been realized.

### The tradition of the “years of science” in Germany

Since the beginning of this century each year is a “year of science” in Germany. Here is the complete list of the fields presented so far:

2000: physics, 2001: life sciences, 2002: geography , 2003: chemistry , 2004: technics , 2005: Einstein’s year , 2006: computer science, 2007: humanities, and 2008: mathematics. (Since 2009 one has abandoned this concept. Rather than to present a particular science one chooses a “motto”. 2009, for example, is the year “Forschungsexpedition Deutschland”.)

There are certain events which had always been repeated: Big opening and closing ceremonies in different cities, the “Wissenschaftssommer” where in some city for one week special events are presented, the “Wissenschaftsschiff”, a ship which serves as a travelling museum and which visits several dozens of ports all over Germany etc.

### Why a “Year of Mathematics”?

It is a commonplace all over the world that the public understanding of mathematics is at a very unsatisfactory level. Most people think that “everything is known since centuries” and that mathematics is not related with really interesting problems, and there are very few who think of their mathematical school days with pleasure.

The result is a decrease in the number of students in the “hard” sciences, and in the next future the number of those who leave the university with a degree in these areas will not suffice to fill the vacant positions.

To change this was the pragmatic aspect of a “Year of Mathematics”. But the goal was more ambitious: the mathematicians aimed at presenting their field as an indispensable part of human culture which plays a fundamental role in economy and various sciences.

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### Partners and sponsors

The mathematicians applied rather late to have the year 2008 as the “Year of Mathematics”. From the beginning on it was clear that many members in the community would collaborate and that it would be a joint effort of all of the German mathematical societies (DMV, GAMM, MNU and GDM). It was surely also very important that a large foundation, the “Deutsche Telekom Stiftung”, decided to act as a generous sponsor of such a year.

After the positive decision a very fruitful and effective collaboration began. The government was represented by the ministry of science and education, the mathematicians mainly by the DMV under their president Günter Ziegler from the Technical University in Berlin (see the picture).



The organizers had a budget of several million Euro at their disposal. A considerable part was used to hire the renowned advertising agency Scholz and Friends to guarantee a professional presentation of the activities. In fact, an abundance of creative suggestions were presented, e.g. the motto (“Du kannst mehr Mathe als Du denkst”<sup>2</sup>) of the year and the logo (“Mathe – alles, was zählt”<sup>3</sup>).



### Some figures

Here are some figures in order to illustrate the extent of the activities:

- “Mathemacher”: There were more than 1300 partners who prepared various activities like talks, exhibitions, special events, articles in newspapers,...
- School children: 34.000 schools received special information on mathematics.
- Exhibitions: Four great exhibitions attracted the attention of more than 500.000 visitors (“Zahlen bitte”, “Mathema”, “Imaginary”, the science ship).
- More than 30 mathematical competitions of different levels were organized.

<sup>2</sup> “You know more of mathematics than you think”.

<sup>3</sup> “Mathematics – everything that counts”.

- The mathematical films of the “film festival” were shown in more than 100 cities.
- 3500 articles in journals and 2500 contributions in online media were concerned with mathematics.
- There were presented 500 broadcastings centering around mathematics in the TV and in the radio.

### Examples of the activities

In the sequel we describe some of the activities in the German “Year of Mathematics”.

#### Posters

Already in January 2008 one could see large mathematical posters at many places: in the streets, at the railway stations, at the airports, etc. They were thought of to transfer the message “Mathematics can be found everywhere”. Here are two examples which concern knot theory and data compression.



#### Special events and competitions for school children

At nearly every German school there were organized special events for school children. Of particular importance was the “Mathekoffer” (the math trunk), a present sponsored by the Deutsche Telekom foundation. It contained hands-ons to visualize certain mathematical concepts like space and chance.



### The science ship

The “science ship” is an ordinary transport ship which from September to March carries potatoes, charcoal etc. and which in summer time transforms to a museum. For the 2008 exhibition the mathematical institutions from universities, from the Fraunhofer Gesellschaft and the Helmholtz Gesellschaft were asked to propose exhibits. An impressive collection was prepared which was presented on roughly 1000 square meters: films, hands-ons, exhibits, lectures, special information for school teachers etc. Never before this ship has had such a large number of visitors.



### A special book for high-school graduates

Springer Verlag has had the idea to prepare a special book for high-school graduates. This “Kaleidoskop der Mathematik” was edited by E. Behrends (Berlin), P. Gritzmann (Munich) and G. Ziegler (Berlin). It contains a variety of popular articles on mathematics from the books of the German mathematical editors.

In each of the 3500 German high-schools the best graduate in mathematics has got this “Kaleidoskop” as a present. (together with a free membership in the DMV for one year).



### **A mathematical advent calendar**

The “mathematical advent calendar” is a competition for school children in the German speaking European countries. Each day between December 1st and December 24<sup>th</sup> there is presented on a special internet page a mathematical problem, the solutions are submitted electronically. The winners are invited to come to a prize ceremony in the Berlin Urania.

This calendar was launched several years ago. It was repeated every year with increasing success, now there are thousands of participants from all over the world.

### **The science summer in Leipzig**

The summer in 2008 was really hot, and during the hottest period the science summer took place in Leipzig. It consisted of numerous activities, the most important part of the science summer was surely a large exhibition on the central square at the opera house. Here mathematical departments from universities as well as mathematical research institutes presented applications of contemporary mathematics. The science summer was a big success, many school children with their teachers but also families with their children visited the presentations.



### **A media prize**

It is now a commonplace that good relations with the media are of fundamental importance. Already in 2002 the DMV has invited journalists from the important German newspapers to a “working dinner” in a nice restaurant to discuss the problems with the presentation of mathematics in the journals. Also since several years a “media prize” is awarded for the best article on mathematics. In 2008 an additional prize was created: the prize for the best mathematical cartoon.



### Mathematical exhibitions

Many mathematical exhibitions have been prepared for the mathematical year, some of them have been shown at several places. Also parts of the Mathematicum – a mathematical museum in Gießen – were presented in many cities.

The largest among these exhibitions is “Mathema” which is shown between November 2008 and August 2009 in the Technical Museum of Berlin (see [www.mathema-ausstellung.de](http://www.mathema-ausstellung.de)). The organizers aimed at presenting mathematics as an indispensable part of human culture.



### The success of the “Year of Mathematics”

Was the “Year of Mathematics” a success? The answer is a clear “yes” if one compares with competing years: the largest number of articles in the media, the largest number of visitors on the science ship etc. It is, however, too early to decide whether the public understanding of mathematics really has changed considerably to the positive. It will surely be necessary to continue the efforts into this direction.