



IMAGINARY 2008-2010

A travelling exhibition by the Mathematisches
Forschungsinstitut Oberwolfach

Report, November 8th 2010

Contact: Mathematisches Forschungsinstitut Oberwolfach
Schwarzwaldstr. 9-11
D-77709 Oberwolfach-Walke, Germany
Tel: 07834/979-0
Email: greuel@mfo.de
Website: www.mfo.de / www.imaginary-exhibition.com

Director: Gert-Martin Greuel, greuel@mfo.de
Coordination: Andreas Matt, matt@mfo.de
Colaborators: Anna Hartkopf, Herwig Hauser, Christian Stussak, Oliver Labs, Henning Meyer, Felix Riemann, Steffen Weissmann, Sebstía Xambó
Content Design: Aurelién Alvarez, Luc Benard, Martin von Gagern, Étienne Ghys, Stephan Klaus, Manfred Kuhnkies, Jos Leys, Richard Palais, Jürgen Richter-Gebert, Ulrich Pinkall, Nicholas Schmitt,
Partner: Matheon / TU Berlin, RSME, TU München, TU Kaiserslautern, University of Halle, Institut Forwiss/University of Passau
Sponsorship: Federal Ministry for Science and Educations (BMBF), Alphaform, Voxeljet

Wissenschaftsjahr 2008

Mathematik
Alles, was zählt

GEFÖRDERT VOM



Bundesministerium
für Bildung
und Forschung

IMAGINARY 2008-2010

IMAGINARY is an interactive travelling exhibition that presents visualisations, interactive installations, virtual worlds, 3D-objects and their theoretical background from algebraic geometry, singularity theory and differential geometry in an attractive and understandable way. The exhibition was designed by the Mathematisches Forschungsinstitut Oberwolfach (MFO) for the Year of Mathematics in Germany 2008 and was supported by the Federal Ministry for Science and Education (BMBWF).

The travelling exhibition IMAGINARY has visited more than 30 cities in Germany, Austria, England, France, Ukraine, Switzerland and the USA. In the near future installations in science museum (Munich, Madrid, Barcelona, Jerusalem) and collaboration with networks that transmit mathematical contents into schools are planned. Additionally the internationalization of the exhibition (translation to Spanish, French and Portuguese) is in progress.

We managed to extend the contents of the exhibition over the duration of the German Year of Mathematics and the geographical borders of the country. Free exhibitions have taken place in many public areas (Universities, railway stations, bank buildings, research institutes, pleasure grounds, centers and fairs), under joint organisation with local partners like advertising agencies, institutes, city councils etc. The local partners have assisted in public relations, supervision of the exhibition and logistics. In 2011 and 2012 we want to develop an international, extendable platform for attractive communication of mathematical content that enables an independent continuation of the exhibition.

Exhibitions 2008-2010

November 2010

09.11.2010 - 17.12.2010

21.09.2010 - 07.10.2010

08.03.2010 - 17.03.2010

19.01.2010 - 26.02.2010

Baranquilla, University, Columbia

Paris, library, France

Zürich, ETH, Switzerland

Cambridge, research institute, England

Hannover, University, Germany

05.11.2009 - 15.11.2009

09.10.2009

29.9.2009 - 20.10.2009

26.09.2009

27.04.2009 - 01.05.2009

23.03.2009 - 19.04.2009

24.03.2009 - 11.05.2009

03.02.2009 - 20.03.2009

Kiew, museum, Ukraine

Vienna, museum, Austria

Münster, University, Germany

Bonn, University, Germany

Stanford, University, USA

Berkeley, University, USA

Dresden, research institute, Germany

Vienna, University, Austria

05.12.2008 - 19.12.2008

24.10.2008 - 16.11.2008

01.10.2008 - 19.10.2008

24.09.2008 - 21.10.2008

08.09.2008 - 26.09.2008

05.08.2008 - 29.08.2008

08.07.2008 - 30.07.2008

28.06.2008 - 04.07.2008

29.05.2008 - 25.06.2008

17.05.2008 - 25.05.2008

10.03.2008 - 11.04.2008

19.02.2008 - 06.03.2008

10.12.2007 - 18.01.2008

Passau, University, Germany

Saarbrücken, gallery, Germany

Konstanz, BildungsTURM, Germany

Munich, LMU, Germany

Cologne, Uni-Mensa, Germany

Kassel, Sparkasse, Germany

Rust/Freiburg, Europapark, Germany

Leipzig, science summer, Germany

Potsdam, main station, Germany

Stuttgart, idea park, Germany

Kaiserslautern, ITWM, Germany

Berlin, Urania, Germany

Munich, TU Garching, Germany

Special Venues of the Exhibition 2008-2010

05.11.2010

25.10.2010 - 30.10.2010

26.09.2010 - 29.09.2010

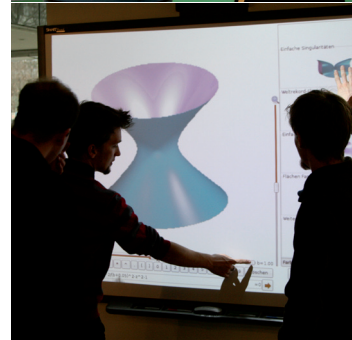
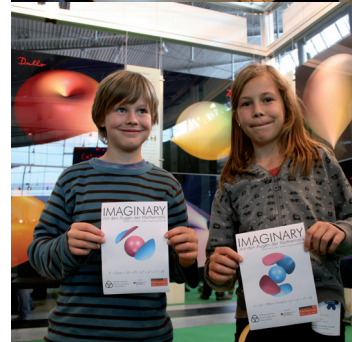
19.07.2010 - 24.07.2010

8. Action Day, Young University, Innsbruck, Austria

India (Development of exhibitions), Mumbai, Indien

Workshop Raising Awareness in Mathematics, Portugal

Talks, MathCamp, Lissabon/Porto/Braga, Portugal



19.07.2010 - 22.07.2010	Talk, conference on Mathematics & Art, Paris, France
07.06.2010 - 25.07.2010	Paris, Institut Henri Poincaré, France
12.05.2010 - 30.09.2010	SURFER-competition, Greece
17.04.2010 - 29.05.2010	Basel, jubilee of the University, Switzerland
17.02.2010 - 24.02.2010	Talks in Tel Aviv and Jerusalem, Israel
19.11.2009	Reception in the German Embassy, Kiev, Ukraine
20.03.2009 - 13.04.2009	Advanced training for teachers, talks, Lahore, Pakistan
01.12.2008 - 24.12.2008	Advent calendar-competition, Deutschland
11.12.2008	Cologne, Closing event Year of Mathematics, Germany
02.11.2008 - 08.11.2008	Advanced training for teachers, Oberwolfach, Germany
18.10.2008 - 21.10.2008	Science days LMU, Germany
16.09.2008 - 17.09.2008	Minisymposium, DMV-Conference, Erlangen, Germany
04.08.2008 - 08.8.2008	Jena, Junior Mathematical Congress, Germany
27.07.2008	Salem, Robert Bosch Event, USA
19.07.2008	Mannheim, computer market, Germany
04.07.2008	Halle, science night, Germany
09.06.2008	Koblenz, research day, Germany
24.05.2008 - 26.05.2008	Bremen, Kino46, Germany
07.05.2008 - 04.09.2008	Science ship, Germany
24.4.2008	Berlin, Girls' Day, Germany
28.01.2008 - 05.02.2008	Berlin, TU, Germany
23.01.2008	Berlin, Opening Year of Mathematics, Germany
05.12.2007 - 06.12.2007	München, Dies Academicus TU, Germany

Planned Exhibitions in 2011-2012

February - March 2012	Barcelona, Spain
December 2011 - January 2012	Valencia, Spain
November 2011	Sevilla, Spain
October 2011	Madrid, Spain
September 2011	Zaragoza, Spain
July-August 2011	Gijon, Spain
June 2011	Pamplona, Spain
May 2011	Bilbao, Spain
April 2011	Palma de Mallorca, Spain
March 2011	Valladolid, Spain
February 2011	Salamanca, Spain
January 2011	Madrid, Spain

The exhibitions in 2011 in Spain are organized in collaboration with the Royal Spanish Mathematical Society (RSME) on the occasion of their centenary.

Permanent IMAGINARY-Installations

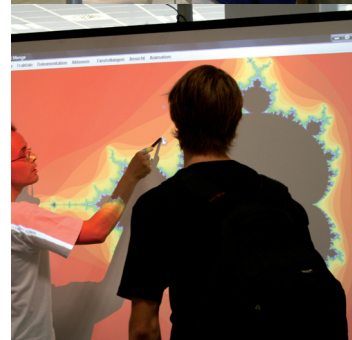
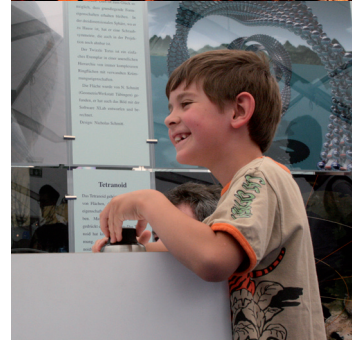
From September 2011	Museum CosmoCaixa, Barcelona, Spain
From March 2011	Bloomfield Science Museum, Jerusalem, Israel
From January 2011	Museum CosmoCaixa, Madrid, Spain
From November 2010	Deutsches Museum, München, Germany
From 30.01.2010	MiMa Museum, Oberwolfach, Germany
From 14.12.200	Second Live, Internet

Awards

23.09.2009	Award „Place in the Land of Ideas 2009“ by Deutsche Bank under the patronage of the federal president.
------------	--

Actions and Projects

The exhibition is accompanied by numerous projects in the field of media and didactic. Especially noteworthy is the IMAGINARY poster set which is part of the math suitcase of the MNU (edition 2500 pieces) and could be purchased for contribution towards expenses by schools and individuals. The exhibition and its programmes can be found on the DVD of the Deutsche Forschungsgemeinschaft. We organized an advanced training for teachers and didactical material can be downloaded



from our website. On a particular minisymposium at the DMV-conference in Erlangen the contents of the exhibitions were introduced. Numerous math & arts competitions amongst others in collaboration with Zeit Online, Spektrum der Wissenschaft took place. In the advent time there was a special advent calendar competition. IMAGINARY was published to an international audience via talks and workshops in Vienna, Lahore, Tel Aviv, Jerusalem, Porto, Lissabon, Kiev and Mumbai.

Numbers of Visitors and Downloads

More than 170 000 individuals visited IMAGINARY, among them over 700 school classes, that gained a particular guidance. Additionally ca. 110 500 visitors saw the exhibits at the special exhibitions and other occasions (i.e. the science ship and science days.)

The attendance of the website www.imaginary-exhibition.com (January 2008 - July 2010) is 506 daily users. On single peak days there were up to 9000 distinct users. The IMAGINARY programmes were downloaded more than 250 000 times, the background articles 70 000 times.

Echo in the Media

Numerous articles and reports were released in print media, the internet, radio and television in Germany and abroad. A collection can be found here:

- New Scientist, Picture of the Month, March 2010
- To Vima, 3 page insert, Greece, May 2010
- Westfälische Nachrichten, Faszination Mathematik, 25.09.2009
- Report in Hessischen Rundfunk 05.08.2008 and WDR 09.08.2008
- BILD-Zeitung, So schön kann Mathe sein!, 14.07.2008
- Potsdamer Neueste Nachrichten: Mit den Augen der Mathematik, 30.05.2008
- Report in the TV station RBB, broadcast Ozon, 19.5.2008
- Report in the TV station 3SAT/ZDF, broadcast NANO, 04.04.2008
- Spektrum der Wissenschaft, Das Ausgedachte in Sichtbares umgerechnet, April 2008
- Die ZEIT and ZEIT Online, articles and Surfer competition, February 2008
- article and report on the website heise.de, February 2008
- Süddeutsche Zeitung, Mathe-Formeln mal ganz anders, 13.12.2007

Sustainability

Sustainability was an important issue while preparing the exhibits and programmes of the exhibition. Every programme that is part of the exhibition can be downloaded for free and can be used by individuals, schools and universities. By means of these programmes and the generated pictures schools and artists organized their own exhibitions. From 2009 on the exhibits are offered to science museums.

Links and hints

- | | |
|---|---|
| [1] www.imaginary-exhibition.com | Exhibition IMAGINARY |
| [2] www.mfo.de | Mathematisches Forschungsinstitut Oberwolfach |
| [3] http://surfer.imaginary-exhibition.com | Programme Surfer |
| [4] http://unterricht.imaginary-exhibition.com | Surfer for class |
| [5] www.spektrum.de/mathekunst | Competition Spektrum der Wissenschaft |
| [6] http://poster.imaginary-exhibition.com | IMAGINARY-Poster-Projekt |
| [7] http://advent.imaginary-exhibition.com | Interaktive advent calendar |
| [8] http://facebook.com/imaginaryex | Facebookpage of IMAGINARY |
| [9] http://www.mima.museum | MiMa Museum, Oberwolfach |

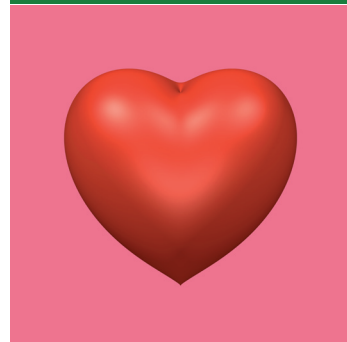
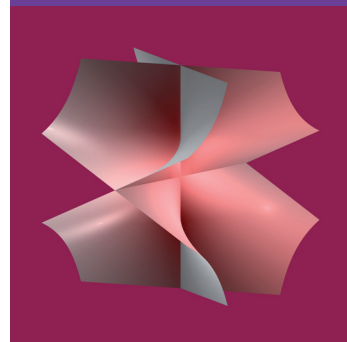
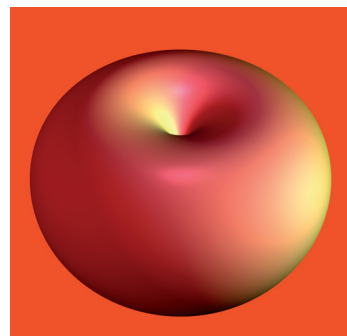
Citations from the IMAGINARY Guests' Book

This beautiful exhibition is very lively because of the excellently guided tour.

Math makes you happy

Excellent, in particular the fact that the software can be used in school

Fantastic!



Great guidance!

An amazing exhibition. I have spent a lot of time here and I got to know many beautiful things.

This should happen more often, actually this should be a permanent exhibition.

Thanks and keep it up!

This exhibition is wonderful and beautiful.

The strange world of mathematics is not easy to understand. But here, one gets closer to it.

I don't like to go to a museum, with the exception of this one.

We came again because it was so fascinating!

Perhaps I should have studied mathematics however...

Simply marvellous, the software is cool!

This is fascinating – I wish I would have experienced this in school ;)

We are just lost for words!

Thanks for the good guidance.

This gives a clear proof for the beauty of mathematics!

Picture Credits

Title: Exhibition IMAGINARY in Hannover

Page 2: Picture 1: Exhibition IMAGINARY in Munich

Picture 2: Picture gallery algebraic surfaces, exhibition IMAGINARY, Berlin

Picture 3: Picture gallery stereographic projections, exhibition IMAGINARY, Stuttgart

Pictures 4 - 6: Interaktive stations SURFER

Page 3: Picture 1: Opening event Year of Mathematics, exhibition IMAGINARY, Berlin

Picture 2: Interaktive stations jReality, exhibition IMAGINARY, Leipzig

Picture 3: Algebraic sculptures, exhibition IMAGINARY, Potsdam

Picture 4: Interaktive stations 3D_XplorMath and Cinderella, IMAGINARY, Potsdam

Picture 5: Exhibition IMAGINARY at the technical university Berlin

Picture 6: Interactive station 3D_XplorMath, IMAGINARY, München

Page 4: Picture 1: IMAGINARY-Posters, Motive Dullo by Herwig Hauser

Picture 2: IMAGINARY-Posters, Motive Quaste by Herwig Hauser

Picture 3: IMAGINARY-Posters, Motive Himmel and Hölle by Herwig Hauser

Picture 4: IMAGINARY-Posters, Motive Seepferdchen by Herwig Hauser

Picture 5: IMAGINARY-Posters, Motive Zitrus by Herwig Hauser

Picture 6: IMAGINARY-Posters, Motive Herz by Herwig Hauser

Page 5: Picture 1: Exhibition IMAGINARY in Hannover

Picture 2: Algebraic sculptures, exhibition IMAGINARY, Bonn

Picture 3: Interactive station Cinderella, MiMa Museum, Oberwolfach

Picture 4: Interactive station Surfer, exhibition IMAGINARY, Stuttgart

Picture 5: Interactive station Cinderella, exhibition IMAGINARY, Stuttgart

Picture 6: Picture gallery algebraic surfaces, exhibition IMAGINARY, Europapark / Rust

Changes in the dates 2011 and 2012 excerpted.

