



IMAGINARY 2008-2012

Interactive Math Communication by the
Mathematisches Forschungsinstitut
Oberwolfach

Report from the 31th of January, 2013

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Support: Klaus Tschira Stiftung (2011-2013), Federal Ministry for Science and Educations (BMBF) (2008-2009)
Sponsoring: Alphaform, Voxeljet, 3wventures, 3dconnexion



Mathematisches
Forschungsinstitut
Oberwolfach

Klaus Tschira Stiftung
gemeinn3tzige GmbH



IMAGINARY 2008-2012

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 from 2008 to 2009 by the German Federal Ministry for Education and Research (BMBF).

The exhibition IMAGINARY has visited more than 80 cities in 20 countries, as Austria, UK, France, Ukraine, Switzerland, Argentina, Poland, Colombia, Panama, Spain, Portugal, Serbia, Russia and the US. The exhibition sets out to evoke interest and curiosity in mathematics. Visitors are encouraged to interact with the exhibits and create their own mathematical artwork using special software. Demonstrators are available to give helpful insights into the theoretical background.

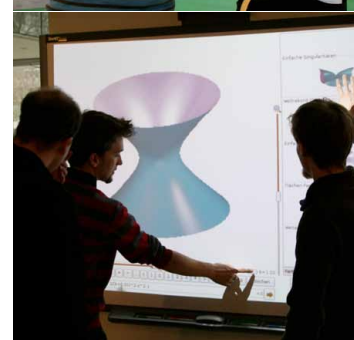
We managed to extend the contents of the exhibition over the duration of the German Year of Mathematics and the geographical borders of the country. In collaboration with RSME in Spain nine travelling exhibitions were staged in Spain and two museums installation were organised in Madrid and Barcelona. Another big success was the permanent installation of IMAGINARY programmes in the Deutsches Museum in Munich, Germany. The internationalization of the exhibition continued with translations into Polish, Russian and Portuguese. IMAGINARY is now available in seven languages.

A unique feature of the exhibition is the sustainable communication of all exhibits through free software and didactical background information and the possibility for organisations or schools to copy the exhibition and organize it on its own.

This concept has been extended since 2011: an international platform of math communication shall be developed. This way all contents of IMAGINARY are made available to a broad audience and the platform also serves as a hub for exchange of ideas in the field of math communication, a field that has seen many advances in the last years. The target group of the platform includes museums, universities and schools. For schools a special IMAGINARY package will be designed to fit into the school curriculum and to the requirements and wishes of the students. The project runs until September 2013 and is supported by the Klaus Tschira Stiftung.

Exhibitions 2008-2012

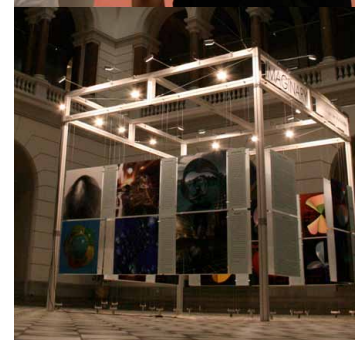
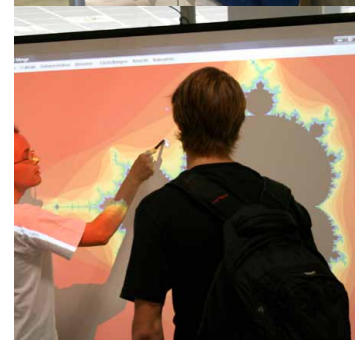
08.12.2012-14.12.2012	Suzhou, China
23.11.2012 - 09.12.2012	Jaroslavl, Russia
12.11.2012 - 26.11.2012	Coclé, Panama
20.10.2012 - 18.11.2012	Buenos Aires, Planetarium, Argentina
10.09.2012 - 30.09.2012	Uljanowsk, Russia
12.07.2012 - 28.10.2012	Buenos Aires, Tecnópolis, Argentina
20.06.2012 - 24.06.2012	Mannheim, Explore Science, Germany
15.06.2012 - 17.12.2012	Granada, Parque de las ciencias, Spain
01.06.2012 - 23.04.2013	Lissabon, Formas & Fórmulas, Portugal
01.05.2012 - 31.05.2012	Belgrad and 11 further cities, Serbia
03.05.2012 - 23.05.2012	Albacete, Spain
29.03.2012 - 15.04.2012	Moskau, Polytechnische Museum, Russia
23.03.2012 - 04.11.2012	Coimbra, Wissenschaftsmuseum, Portugal
15.03.2012 - 27.04.2012	Barcelona, Spain
10.02.2012 - 07.03.2012	Málaga, Spain
19.12.2011 - 02.02.2012	Valencia, Spain
17.11.2011 - 13.12.2011	Sevilla, Spain
17.10.2011 - 11.11.2011	Madrid, Real Academia de Ciencias, Spain
15.09.2011 - 12.10.2011	Zaragoza, Spain
15.07.2011 - 14.08.2011	Spektrale 2011, Mainz, Germany
01.07.2011 - 31.08.2011	Gijón, Spain
03.06.2011 - 24.06.2011	Pamplona, Spain
02.06.2011 - 16.06.2011	Krakow, Poland
30.05.2011 - 10.06.2011	Warsaw, Poland
04.05.2011 - 26.05.2011	Bilbao, Spain
30.03.2011 - 27.04.2011	Palma de Mallorca, Spain
25.02.2011 - 23.03.2011	Valladolid, Spain



27.01.2011 - 17.02.2011 Salamanca, Spain
 09.11.2010 - 17.12.2010 Paris, Library, France
 21.09.2010 - 07.10.2010 Zürich, ETH, Switzerland
 08.03.2010 - 17.03.2010 Cambridge, research institute, England
 19.01.2010 - 26.02.2010 Hannover, University, Germany
 05.11.2009 - 15.11.2009 Kiew, Museum, Ukraine
 09.10.2009 Vienna, Museum, Austria
 29.9.2009 - 20.10.2009 Münster, University, Germany
 26.09.2009 Bonn, University, Germany
 27.04.2009 - 01.05.2009 Stanford, University, USA
 23.03.2009 - 19.04.2009 Berkeley, University, USA
 24.03.2009 - 11.05.2009 Dresden, Research Institute, Germany
 02.03.2009 - 20.03.2009 Vienna, University, Austria
 05.12.2008 - 19.12.2008 Passau, University, Germany
 24.10.2008 - 16.11.2008 Saarbrücken, Gallery, Germany
 01.10.2008 - 19.10.2008 Konstanz, BildungsTURM, Germany
 24.09.2008 - 21.10.2008 Munich, LMU, Germany
 08.09.2008 - 26.09.2008 Cologne, Uni-Mensa, Germany
 05.08.2008 - 29.08.2008 Kassel, Sparkasse, Germany
 08.07.2008 - 30.07.2008 Rust/Freiburg, Europapark, Germany
 28.06.2008 - 04.07.2008 Leipzig, Science Summer, Germany
 29.05.2008 - 25.06.2008 Potsdam, Train Station, Germany
 17.05.2008 - 25.05.2008 Stuttgart, Idea Park, Germany
 10.03.2008 - 11.04.2008 Kaiserslautern, ITWM, Germany
 19.02.2008 - 06.03.2008 Berlin, Urania, Germany
 10.12.2007 - 18.01.2008 Munich, TU Garching, Germany

Special Exhibitions and Events 2008-2012

19.06.2012 - 06.07.2012 Workshop, CCEBA, Buenos Aires, Argentina
 18.06.2012 - 21.06.2012 School workshop, Buenos Aires, Argentina
 24.05.2012 - 25.05.2012 Talk, Math Art Summit, Brussels
 05.05.2012 FU Berlin, Open Science Day, Germany
 24.04.2012 - 26.04.2012 IMAGINARY Conference, Barcelona, Spain
 23.04.2012 - 27.04.2012 School workshops, Athen, Greece
 19.03.2012 - 23.03.2012 School exhibition/workshop, Detmold, Germany
 25.01.2012 Science Lounge, Bremerhaven, Germany
 06.12.2011 - 08.12.2011 Talk, Wissenschaft im Dialog, Köln, Germany
 13.10.2011 - 15.10.2011 Science Days, Europapark, Rust, Germany
 08.10.2011 - 09.10.2011 Design and Creativity Fair, Innsbruck, Austria
 17.08.2011 - 19.08.2011 Exhibition, Barranquilla, Colombia
 30.5.2011 Event, ITBA, Buenos Aires, Argentina
 24.05.2011 - 28.05.2011 Talk, ECSITE-Konferenz, Warsaw, Poland
 05.05.2011 Exhibition, Heidelberg, Germany
 25.01.2011 - 27.01.2011 HOBIT-Fair, Darmstadt, Germany
 01.02.2011 Opening of the IMU office, Berlin, Germany
 04.12 - 05.12. 2010 Talk, Barranquilla, University, Colombia
 05.11.2010 8. Action Day, Young University, Innsbruck, Austria
 25.10.2010 - 30.10.2010 India (Development of exhibitions), Mumbai, India
 26.09.2010 - 29.09.2010 Workshop Raising Awareness in Mathematics, Portugal
 19.07.2010 - 24.07.2010 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, Kiew, Ukraine
 20.03.2009 - 13.04.2009 Advanced training for teachers, talks, Lahore, Pakistan
 01.12.2008 - 24.12. 2008 Advent calendar-competition, Germany
 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	Munich, Dies Academicus TU, Germany

Planned Exhibitions in 2013

End of 2014	Leibniz Exhibition, Germany
15.03.2013 - 14.06.2013	Santiago de Compostela, Spanien
05.03.2013 – 08.03.2013	MPE2013, UNESCO, Paris, France
04.02.2013 - 16.02.2013	Nowosibirsk, Russia

Further exhibitions are planned in Denmark, Norway, Pakistan, Uruguay, Colombia and China.

IMAGINARY Installations in Science Museums

Since 15.12.2012	MoMath, New York, US
01.06.2012 - 23.04.2013	Naturhistorisches Museum, Lissabon, Portugal
Since September 2011	Museum CosmoCaixa, Barcelona, Spain
Seit Juli 2011	Deutsches Museum, München, Germany
20.01.2011 - 06.06.2011	Museum CosmoCaixa, Madrid, Spain
Since 30.01.2010	MiMa Museum, Oberwolfach, Germany
Since 14.12.2008	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 of Germany.
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Actions and Projects

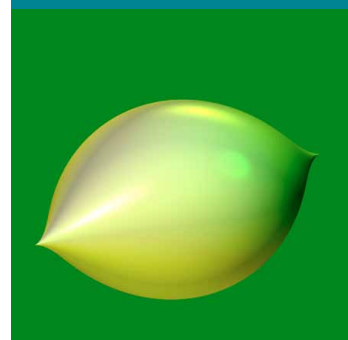
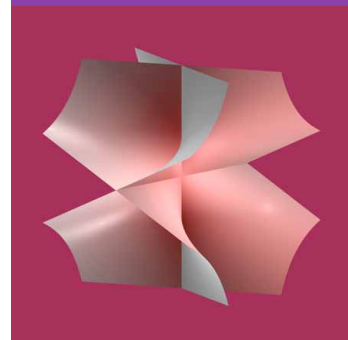
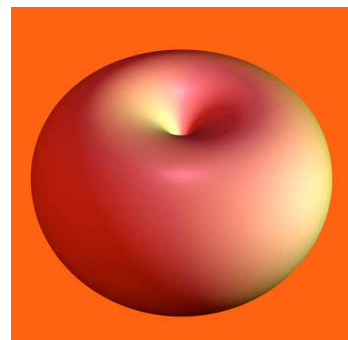
The exhibition is accompanied by numerous projects in the field of media and didactics. Especially noteworthy are the IMAGINARY poster set which was part of the math suitcase of the MNU (edition 2500 pieces) and numerous math & arts competitions amongst others in collaboration with Zeit Online, Spektrum der Wissenschaft and media in Austria, France and Greece. IMAGINARY was presented to an international audience via talks and workshops in Vienna, Lahore, Tel Aviv, Jerusalem, Porto, Lissabon, Kiev, Liverpool, Mumbai and Buenos Aires.

Numbers of Visitors and Downloads

More than 800,000 individuals visited IMAGINARY, among them over 1700 school classes, that received free guided tours. Additionally many people are visiting the permanent exhibits in the museums. The attendance of the website www.imaginary-exhibition.com is approx. 750 - 1000 daily unique users (November 2011). On single peak days there were up to 9000 distinct users. The IMAGINARY programmes were downloaded more than 500 000 times, the background articles approx. 300 000 times.

Echo in the Media and Publications

Numerous articles and reports on the individual exhibitions and events were published in print media, the internet, radio and television in Germany and abroad. Among them are articles in newspapers as Die Zeit, Süddeutsche Zeitung or BILD-Zeitung and TV reports in RBB, 3SAT/ZDF/Antena 3. Startig in 2011 several articles on IMAGINARY have been published, among them in the DMV Mitteilungen, in "Rasing Awareness in Mathematics" (Springer Book 2012) and the VisMath Book (Hungary 2012).



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

- | | |
|---|---|
| [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 | For Schools |
| [5] www.spektrum.de/mathekunst | Competition Spektrum der Wissenschaft |
| [6] http://www.imaginary-exhibition.com/poster | IMAGINARY poster set |
| [7] http://advent.imaginary-exhibition.com | Interactive advent calendar |
| [8] http://facebook.com/imaginary.exhibition | Facebook page 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.

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!

