

Given talks<sup>1</sup>:

- 31.05.2008 — *Generatory liczb pseudolosowych* [*Pseudo-Random Number Generators*] (XXIV SMS' Session *Applications of mathematics*, Szczyrk)
- 10.10.2008 — *Prymitywy matematyczne* [*Mathematical primitives*] (talk for high schools)
- 17.10.2008 — *Iloczyny liczb pierwszych a hipersześciany* [*Prime number products and hypercubes*] (talk for members of the SMS)
- 29.11.2008 — *O liczbach leptonowych i kwarkowych* [*Lepton and quark numbers*] (XXV SMS' Session *Numbers*, Szczyrk)
- 19.12.2008 — *Konstrukcje geometryczne* [*Geometric constructions*] (talk for high schools)
- 06.03.2009 — *Przestrzenie metryczne, czyli... jak matematyk mierzy odległość* [*Metric spaces — mathematician's means to count the distance*] (Spotkanie z Królową Nauk, Chorzów)
- 13.03.2009 — *Gra w życie* [*Life*] (The  $\pi$  day)
- 19.03.2009 — *Fraktale* [*Fractals*] (Scientific festival, Tychy)
- 03.04.2009 — *Jak obliczyć  $\sin x$ ?* [*How to evaluate  $\sin x$ ?*] (talk for high schools)
- 01.05.2009 — *O nieciągłych rozwiązaniach równania Cauchy'ego* [*Discontinuous solutions of the Cauchy equation*] (XXVI SMS' Session *Equations and Inequalities*, Szczyrk)
- 29.05.2009 — *Kiedy  $\sin x = 2$ ?* [*When  $\sin x = 2$  holds?*] (talk for high schools)
- 06.07.2009 — *Kilka słów o liczbach Liouville'a* [*Few words about Liouville numbers*] (I mathematical summer school of Cracow University of Technology, Krynica Górská)
- 01.09.2009 — *Zbiory niemierzalne a równanie Cauchy'ego* [*Non-measurable sets and Cauchy functional equation*] (Summer Maths Workshop 2009, Toruń)
- 09.10.2009 — *O rysowaniu wykresów funkcji* [*Plotting function graphs*] (talk for high schools)
- 07.11.2009 — *Obrazki rekurencyjne i gramatyki* [*Recursive images and gramatics*] (XXVII SMS' Session *Mathematics in pictures*, Szczyrk)
- 04.12.2009 — *Całe mnóstwo sposobów na narysowanie trójkąta Sierpińskiego* [*Lots and lots of ways to draw a Sierpiński triangle*] (talk for high schools)
- 17.12.2009 — *Paradoks malarzy* [*Painter's Paradox*] (Scientific festival, Tychy)

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Repository with the most recent version of this document:  
<https://github.com/vil02/academicActivities>

<sup>1</sup>in square brackets the translation of the title is given

- 01.02.2010 — *Drawings of polynomial roots* (6<sup>th</sup> international Students' Conference on analysis, Sífökút)
- 12.03.2010 — *Co potrafią narysować wielomiany?* [*What can be drawn by polynomials?*] (The  $\pi$  day)
- 09.04.2010 — *O pewnym równaniu funkcyjnym* [*A certain functional equation*] (talk for high schools)
- 29.04.2010 — *O pewnej technice rysowania podzbiorów  $\mathbb{R}^3$*  [*A certain method of drawing the subsets of  $\mathbb{R}^3$* ] (talk for members of the SMS)
- 01.05.2010 — *O pewnym twierdzeniu z teorii liczb* [*A certain theorem from the number theory*] (XXVIII SMS' Session *Alternative proofs*, Szczyrk)
- 07.05.2010 — *Kilka słów o automatach skończenie stanowych* [*A few words about finite state machines*] (talk for high schools)
- 12.05.2010 — *Od abstrakcji do zastosowań — odległość Hamminga* [*From abstraction to applications — Hamming distance*] (VI Powiatowy Drużynowy Konkurs Matematyczny o Puchar Dyrektora II LO im. M. Kopernika w Cieszynie)
- 20.07.2010 — *Miara Lebesgue'a i zbiory niemierzalne* [*Lebesgue measure and non-measurable sets*] (7<sup>th</sup> SMS' Summer Camp *Measure Theory*, Zakopane)
- 23.07.2010 — *Funkcje o wahanii skończonym* [*Functions with finite fluctuation*] (7<sup>th</sup> SMS' Summer Camp *Measure Theory*, Zakopane)
- 27.08.2010 — *O sitach* [*About sieves*] (Summer Maths Workshop 2010, Toruń)
- 30.10.2010 — *O liczbie  $\pi$*  [*About  $\pi$* ] (talk for Unikids Jaworzno)
- 13.11.2010 — *Matematyczna tresura żółwia* [*Mathematical turtle training*] (talk for Unikids Jaworzno)
- 19.11.2010 — *Matematyka na niebie* [*Mathematics on the sky*] (talk for high schools)
- 27.11.2010 — *Rozwinięcie  $\pi$ , superstringi i programowanie genetyczne* [*Representation of  $\pi$ , superstrings and genetic programming*] (XXIX SMS' Session *Mathematics and Computing Science*, Szczyrk)
- 10.12.2010 — *O nieskończonościach* [*About infinities*] (Scientific festival, Tychy)
- 18.12.2010 — *Gdyby świat miał ułamkowy wymiar* [*If world would have fractional dimension*] (talk for Unikids Jaworzno)
- 25.02.2011 — *Wokół twierdzenia Riemanna* [*Around the Riemann series theorem*] (talk for high schools)
- 14.03.2011 — *O pewnej szalonej funkcji* [*About some crazy function*] (The  $\pi$  day)
- 02.05.2011 — *Funkcja trzynastkowa* [*The thirteen function*] (XXX SMS' Session *Pathologies and paradoxes in mathematics*, Szczyrk)

- 27.05.2011 — *Równania różniczkowe, czyli strzałki na płaszczyźnie* [*Differential equations, i.e. arrows on the plane*] (talk for high schools)
- 02.07.2011 — *Rachunek operatorów Mikusińskiego* [*Mikusiński's operational calculus*] (8<sup>th</sup> SMS' Summer Camp Applications of differential equations, Zakopane)
- 13.09.2011 — *Polish Jura — not only for climbing* (ACAMiMM 2011, Bydgoszcz)
- 23.09.2011 — *Ilu ludzi żyło na świecie?* [*How many people lived in the world?*] (Silesian Scientists' Night 2011, Katowice)
- 28.10.2011 — *O pewnej programistycznej sztuczce* [*On a certain programming trick*] (talk for members of the SMS)
- 05.11.2011 — *Szereg harmoniczny i cegły* [*Harmonic series and bricks*] (Aktywny w szkole — aktywny w życiu, Katowice)
- 12.11.2011 — *Światy możliwe* [*Possible worlds*] (XXXI SMS' Session Motivations, intuitions, constructions, Szczyrk)
- 02.12.2011 — *Osobliwości z przedziału  $[0, 1]$*  [*Peculiarities of the  $[0, 1]$  interval*] (talk for high schools)
- 09.12.2011 — *O maszynach Turinga* [*About Turing machines*] (Scientific festival, Tychy)
- 31.01.2012 — *Few words about attractors* (8<sup>th</sup> international Students' Conference on analysis, Sífkökút)
- 15.03.2012 — *Jak natura radzi sobie z problemami?* [*How nature solves problems?*] (The  $\pi$  day)
- 10.05.2012 — *Attractors for semigroups in metric spaces* (talk for members of the SMS)
- 11.05.2012 — *Implementacja świata w matematyce* [*Implementation of the world in mathematics*] (talk for high schools)
- 02.06.2012 — *Nie mam pojęcia, czyli metody numeryczne dla równań różniczkowych* [*I do not know, i.e. the numerical methods for differential equations*] (XXXII SMS' Session Algorithms, Szczyrk)
- 12.07.2012 — *Parada kłamców — algorytm metropolis* [*Parade of liars — Metropolis algorithm*] (9<sup>th</sup> SMS' Summer Camp Applications of probability theory, Zakopane)
- 24.11.2012 — *Złośliwe argumenty NWD* [*Mischievous arguments of GCD*] (XXXIII SMS' Session Number theory and cryptography, Ustroń, talk presented via the Internet)
- 03.12.2012 — *Podstawy programu POV-Ray* [*Basics of the POV-Ray*] (talk for chair of the Mathematical Methods in Mathematics)

- 13.12.2012 — *O pewnej konsekwencji własności Darboux* [On some consequence of Darboux property] (Scientific festival, Tychy)
- 08.01.2013 — *O pewnym uogólnieniu równania Steinhausa* [About some generalization of Steinhaus functional equation] (meeting no. 1291 of the chair of functional equations, Katowice)<sup>2</sup>
- 24.01.2013 — *O istnieniu rozwiązania dla problemu optymalnych połączeń fotonicznych* [On the existence of solution of the problem of optimal photonic wire bonds] (meeting no. 171 of the Chair of the Mathematical Methods in Economy and Finances)
- 03.02.2013 — *Some remarks on weakly Picard operators and their application in functional equations* (9<sup>th</sup> international Students' Conference on analysis, Ustroń)<sup>3</sup>
- 15.03.2013 — *O rzeczach niemożliwych* [About impossible things] (The  $\pi$  day)
- 25.03.2013 — *Pewna charakteryzacja trójkąta równobocznego* [A characterization of an equilateral triangle] (talk for members of the SMS)
- 07.06.2013 — *Problem Dydony* [Dido's problem] (talk for members of the SMS)
- 04.10.2013 — *Równania Maxwella i światłowody* [Maxwell's equations and optical waveguides] (talk for members of the SMS)
- 27.01.2014 — *About applications of bifurcation theory to some problems arising from non-linear Maxwell's equations* (GRK1294 seminar)
- 11.04.2014 — *Matematyka i łodzie (oraz okręty) podwodne* [Mathematics and submarines] (talk for high schools)
- 25.08.2014 — *Calderón-Zygmund inequality* (GRK1294 workshop, Bad Herrenalb) (talk was given also on 14.08.2014 at the seminar of the Workgroup *Nonlinear Partial Differential Equations*)
- 23.09.2014 — *Twierdzenie Crandalla-Rabinowitza i jego zastosowanie* [Crandall-Rabinowitz theorem and its application] (talk for members of the SMS)
- 02.02.2015 — *Travelling waves for a nonlinear Maxwell's equations* (GRK1294 seminar)
- 27.03.2015 — *O pewnym złośliwym ciągu całek* [On some catty sequence of integrals] (talk for members of the SMS)
- 27.03.2015 — *Gra w stosy* [Game of piles] (talk for high schools)
- 07.07.2015 — *Periodic solutions of some nonlinear wave equation* (seminar of the Workgroup *Nonlinear Partial Differential Equations*)

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<sup>2</sup>some related notes: [https://github.com/vil02/nowhere\\_continuous\\_wpo](https://github.com/vil02/nowhere_continuous_wpo)

<sup>3</sup>some related notes: [https://github.com/vil02/nowhere\\_continuous\\_wpo](https://github.com/vil02/nowhere_continuous_wpo)

- 15.01.2016 — *Existence of travelling waves for certain quasilinear/semilinear wave equations* (CRC 1173: Workshop of Projects A5 & A6 Nonlinear Maxwell Equations, Karlsruhe)
- 08.04.2016 — *Existence of some travelling waves for nonlinear Maxwell equations* (1<sup>st</sup> annual meeting of the CRC 1173, Rastatt)
- 21.12.2016 — *O pewnej funkcji nigdzie wypukłej z wypukłym ograniczeniem górnym* [*About a certain nowhere convex function with a convex upper bound*] (talk for members of the SMS)<sup>4</sup>
- 23.05.2017 — *On the existence of travelling waves for some semi- and quasilinear wave equations* (International Conference on Elliptic and Parabolic Problems, minisymposium: *PDEs arising in nonlinear optics*, Gaeta)
- 15.03.2021 — *Co można znaleźć w potęgach dwójki?* [*What can be found in the powers of two?*] (The  $\pi$  day)<sup>5</sup>
- 14.03.2022 — *Problemy optymalizacyjne i symulowane wyżarzanie* [*Optimization problems and simulated annealing*] (The  $\pi$  day)<sup>6</sup>

Object Oriented Programming Workshop for Students' Mathematical Society of the University of Silesia:

- 18.11.2011
- 09.12.2011
- 12.01.2012
- 29.03.2012

Papers:

- *Traveling waves for a quasilinear wave equation*, Nonlinear Anal., 225:113115, 2022, DOI: 10.1016/j.na.2022.113115 (co-authors: Gabriele Brüll, Wolfgang Reichel)<sup>7</sup>

Articles in students journal [MACIERZATOR] (ISSN 2083–9774)<sup>8</sup>:

- *Kilka ciekawostek o spirali logarytmicznej* [*A few interesting facts about logarithmic spiral*] (Macierzator22, April 2009)
- *Liczby pierwsze na płaszczyźnie* [*Primes on the plane*] (Macierzator23, May 2009)
- *Kiedy sumy cyfr rozwinięć liczb  $\pi$  i  $e$  są takie same?* [*When the sum of the digits of decimal representation of the  $\pi$  and  $e$  are the same?*] (Macierzator24, October 2009)
- *Funkcja Ackermanna* [*Ackermann function*] (Macierzator25, November 2009)

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<sup>4</sup>notes: [https://github.com/vil02/nowhere\\_convex](https://github.com/vil02/nowhere_convex)

<sup>5</sup>presentation and related material: <https://github.com/vil02/pi2021>

<sup>6</sup>presentation and related material: <https://github.com/vil02/pi2022>

<sup>7</sup>pdf, preprint available at arXiv: 2204.05570 and at CRC1173

<sup>8</sup>in square brackets the translation of the title is given

- *O kilku strasznych dowodach* [About few scary proofs] (Macierzator26, December 2009)
- *O samopodobieństwie trochę inaczej* [About self-similarity in different way] (Macierzator27, January 2010)
- *O pewnej maszynie* [About some machine] (Macierzator28, February 2010)
- *Gonitwa na płaszczyźnie* [Chase on the plane] (Macierzator33, November 2010)
- *O tym, że matematyka potrafi być czasami bardzo złośliwa* [Mathematics can be sometimes very nasty] (Macierzator34, December 2010)
- *O pewnej granicy, rozwinięciu binarnym i logarytmie naturalnym* [About some limit, binary expansion and natural logarithm] (Macierzator35, February 2011)
- *Twierdzenie Midy’ego* [Midy’s theorem] ( $\pi$ -Macierzator36, March 2011)
- *Twierdzenia Tarskiego o punkcie stałym* [Tarski’s fixed point theorem] (co-authors: Marek Biedrzycki, Szymon Draga, Mateusz Jurczyński, Jolanta Marzec, Weronika Siwek, Mikołaj Stańczyk, Aleksandra Urban, Peter Volkmann) (Macierzator38, May-June 2011)
- *Zasada szufladkowa — kilka prostych wniosków* [Pigeonhole principle — few interesting corollaries] (Macierzator39, September 2011)
- *Spowalnianie rozbieżności szeregów* [Decreasing the rate of divergence of series] (Macierzator41, November 2011)
- *O pewnym ciekawym szeregu* [On some interesting series] ( $\pi$ -Macierzator45, March 2012)
- *O gęstości obrazu liczb naturalnych poprzez funkcję sinus* [On the density of the image of naturals by sine] (Macierzator46, April 2012)
- *Przykład Dieudonné’a równania różniczkowego bez rozwiązania* [Dieudonné’s example of differential equation without solution] (co-authors: Wojciech Bielas, Szymon Draga, Konrad Jałowiecki, Magdalena Nowak, Agnieszka Piszczek, Magdalena Sitko, Peter Volkmann, Adam Wrzesiński, Radosław Zawiski, Joanna Zwierzyńska) (Macierzator47, May 2012)
- *Matematyczne polowanie na zająca* [Mathematical hunt for a hare] ( $\pi$ -Macierzator 56, March 2014)

Posters:

- 21.03.2017 — *Travelling waves for some semilinear and quasilinear equations* (2<sup>nd</sup> annual meeting of the CRC 1173, Rastatt)

Conferences and scientific festivals:

- 13.03.2008–14.03.2008, Katowice — The  $\pi$  day

- 30.05.2008–01.06.2008, Szczyrk — XXIV SMS' Session *Applications of mathematics*
- 28.11.2008–30.11.2008, Szczyrk — XXV SMS' Session *Numbers*
- 07.02.2009–10.02.2009, Szare — The 5<sup>th</sup> International Students' Conference on Analysis
- 06.03.2009, Chorzów — Spotkanie z królową nauk
- 12.03.2009–14.03.2009, Katowice — The  $\pi$  day
- 19.03.2009, Tychy — Scientific festival
- 01.04.2009, Ostrava — 19<sup>th</sup> Annual Vojtěch Jarník International Mathematical Competition
- 22.04.2009, Katowice — Scientific festival
- 30.04.2009–03.05.2009, Szczyrk — XXVI SMS' Session *Equations and Inequalities*
- 04.07.2009–08.07.2009, Krynica — I mathematical summer school of Cracow University of Technology
- 31.08.2009–04.09.2009, Toruń — Summer Maths Workshop 2009
- 20.09.2009–26.09.2009, Kraków — XII International Workshop for Young Mathematicians “Probability Theory and Statistics”
- 06.11.2009–08.11.2009, Szczyrk — XXVII SMS' Session *Mathematics in pictures*
- 17.12.2009, Tychy — Scientific festival
- 31.01.2010–03.02.2010, Síkfőkút — 6<sup>th</sup> international Students' Conference on analysis
- 11.03.2010–13.03.2010, Katowice — The  $\pi$  day
- 25.03.2010, Ostrava — 20<sup>th</sup> Annual Vojtěch Jarník International Mathematical Competition
- 28.04.2010–29.04.2010, Katowice — Scientific festival
- 30.04.2010–03.05.2010, Szczyrk, XXVIII SMS' Session *Alternative proofs*
- 12.05.2010, Cieszyn — VI Powiatowy Drużynowy Konkurs Matematyczny o Puchar Dyrektora II LO im. M. Kopernika w Cieszynie
- 19.07.2010–25.07.2010, Zakopane — 7<sup>th</sup> SMS' Summer Camp *Measure Theory*
- 23.08.2010–27.08.2010, Toruń — Summer Maths Workshop 2010
- 19.09.2010–24.09.2010, Kraków — XIII International Workshop for Young Mathematicians “Logic and Foundations of Mathematics”

- 24.09.2010, Katowice — Silesian Scientists' Night
- 26.11.2010–28.22.2010, Szczyrk — XXIX SMS' Session *Mathematics and Computing Science*
- 10.12.2010, Tychy — Festiwal Nauki
- 05.02.2011–08.02.2011, Wisła — 7<sup>th</sup> international Students' Conference on analysis
- 14.03.2011–15.03.2011, Katowice — The  $\pi$  day
- 11.04.2011–14.04.2011, Katowice — Scientific festival
- 29.04.2011–03.05.2011, Szczyrk — XXX SMS' Session *Pathologies and paradoxes in mathematics*
- 01.07.2011–07.07.2011, Zakopane — 8<sup>th</sup> SMS' Summer Camp *Applications of differential equations*
- 04.09.2011–18.09.2011, Bydgoszcz — European Intensive Program (ACAMiMM)
- 23.09.2011, Katowice — Silesian Scientists' Night
- 10.11.2011–13.11.2011, Szczyrk — XXXI SMS' Session *Motivations, intuitions, constructions*
- 18.01.2012, Katowice — I SMS and KNAL symposium — *Space*
- 28.01.2012–31.01.2012, Sífőkút — 8<sup>th</sup> international Students' Conference on analysis
- 14.03.2012–15.03.2012, Katowice — The  $\pi$  day
- 26.05.2012, Chorzów — Śląski Integracyjny Piknik Naukowy
- 01.06.2012–03.06.2012, Szczyrk — XXXII SMS' Session *Algorithms*
- 02.07.2012–07.07.2012, Kraków — 6<sup>th</sup> European Congress of Mathematics
- 09.07.2012–15.07.2012, Zakopane — 9<sup>th</sup> SMS' Summer Camp *Applications of probability theory*
- 24.09.2012–27.09.2012, Krynica — Summer school of Institute of Mathematics of the University of Silesia 2012
- 23.11.2012–25.11.2012, Ustroń — XXXIII SMS' Session *Number theory and cryptography*
- 13.12.2012, Tychy — Scientific festival
- 02.02.2013–05.02.2013, Ustroń — 9<sup>th</sup> international Students' Conference on analysis
- 14.03.2013–15.03.2013, Katowice — The  $\pi$  day



- 04.07.2013–05.07.2013, Gießen — Nonlinear PDE days “Workshop on Geometric PDEs”
- 17.09.2013–20.09.2013, Rome —  $P(n)$  School on “Recent Trends in Nonlinear PDEs”
- 02.06.2014–07.06.2014, Cetraro — 60<sup>th</sup> Centro Internazionale Matematico Estivo International Mathematical Summer Center *Partial Differential Equations and Geometric Measure Theory*
- 12.06.2014–13.06.2014, Cologne — PDE Days
- 25.08.2014–27.08.2014, Bad Herrenalb — GRK1294 workshop
- 17.09.2014–20.09.2014, Poznań — Joint Meeting of the German Mathematical Society (DMV) and the Polish Mathematical Society (PTM)
- 15.02.2015–20.02.2015, Mbour — Spring School on Variational and Geometric Methods in Nonlinear PDEs
- 14.07.2015–15.07.2015, Karlsruhe — Nonlinear PDE Days — In Honour of Michael Plum on the Occasion of his 60<sup>th</sup> Birthday
- 20.07.2015–24.07.2015, Karlsruhe — The 12<sup>th</sup> International Conference on Mathematical and Numerical Aspects of Waves (Waves 2015)
- 15.10.2015–16.10.2015, Karlsruhe — Final GRK 1294 Workshop
- 15.01.2016, Karlsruhe — CRC 1173: Workshop of Projects A5 & A6 Nonlinear Maxwell Equations
- 15.02.2016–19.02.2016, Mbour — Spring School on Nonlinear PDEs and Related Problems
- 04.04.2016–08.04.2016, Rastatt — 1<sup>st</sup> annual meeting of the CRC 1173
- 12.09.2016–15.09.2016, Karlsruhe — Summer school on Wave phenomena: analysis and numerics (project Analysis 2 with: Leonid Chaichenets, Christoph Kehle, Junaid Mustafa, Nikolaos Pattakos, Rahmi Rusin, Michael Ullmann)
- 16.09.2016, Karlsruhe — CRC1173 opening event
- 13.10.2016–14.10.2016, Gießen — Nonlinear PDE days “Junior Nonlinear PDE Days”
- 20.03.2017–24.03.2017, Rastatt — 2<sup>nd</sup> annual meeting of the CRC 1173
- 22.05.2017–26.05.2017, Gaeta — International Conference on Elliptic and Parabolic Problems
- 13.06.2017–14.06.2017, Karlsruhe — PDEs\_unplugged@Karlsruhe
- 07.10.2019–11.10.2019, Lübeck — Europe Biobank Week 2019
- 15.03.2021, Katowice — The  $\pi$  day

- 21.02.2023, Toronto — Physics Sposium 2023: Celebrating 50 years of John Sipe at UofT
- 13.07.2023, Karlsruhe — Kick-off event to the 3<sup>rd</sup> funding period of CRC 1173

Teaching:

- *Classical Methods for Partial Differential Equations* — exercises to the lecture of Prof. Dr. Michael Plum (WS2015/2016)
- *Aspects of Nonlinear Wave Equations* — exercises to the lecture of Prof. Dr. Wolfgang Reichel (SS2016)
- seminar *Nonlinear wave- and Schrödinger equations* (with Prof. Dr. Wolfgang Reichel) (WS2016/2017)

Academic degrees:

- master thesis: *Equilibria i atraktory [Equilibria and attractors]*, supervisor: prof. dr hab. Jan Cholewa, date of the defence: 29.06.2012, University of Silesia, Katowice, Poland,
- PhD thesis: *Application of bifurcation theory for existence of travelling waves in examples of semilinear and quasilinear wave equations*, 1<sup>st</sup> supervisor: Prof. Dr. Wolfgang Reichel, 2<sup>nd</sup> supervisor: Prof. Dr. Michael Plum, date of the defence: 20.09.2017, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany