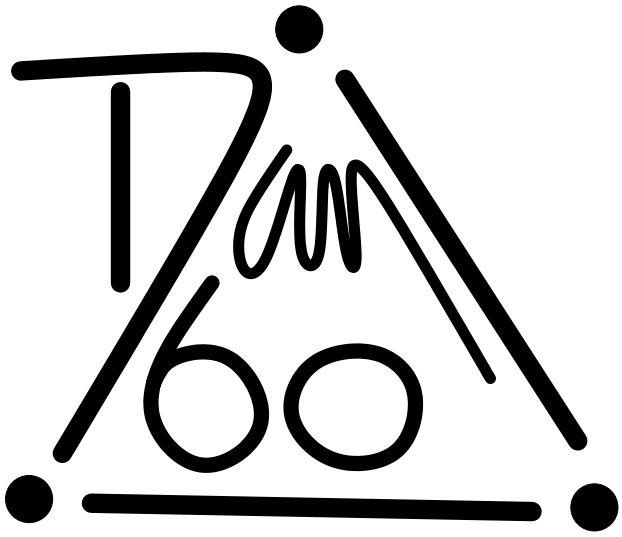
Geometric Group Theory

Wrocław June 29. - July 4. 2015



Scientific Committee

Michael Davis (Ohio State University, USA) - head
Mladen Bestvina (University of Utah, USA)
Thomas Delzant (Universit de Strasbourg, France)
Alexander Dranishnikov (University of Florida, Gainsville, USA)
Ursula Hamenstädt (Universität Bonn, Germany)
Michah Sageev (Technion, Haifa, Israel)
Jacek Świątkowski (Uniwersytet Wrocławski, Poland)

Local organizers

Tomasz Elsner
Jan Dymara
Światosław Gal
Łukasz Garncarek
Michał Marcinkowski
Piotr Nowak

The Conference is co-organized and/or financially supported by:

Banach Center
Mathematical Institute, University of Wroclaw
IMPAN - Institute of Mathematics, Polish Academy of Sciences
WCNM - Warsaw Center of Mathematics and Computer Science
NCN - Polish National Science Centre, grant 2012/06/A/ST1/00259

Confernece logo by Katarzyna Dymara

Contents

Conference information

Opening ceremony. The opening ceremony will be on Monday at 10:00.

Wi-fi. There is eduroam wi-fi available at the Mathematical Institute. We will also provide a conference hot-spot (ssid:**ggt**, user:**ggt**, password:**WFe!10:$YVto71**).

Lunch. All official conference participants will be offered free lunches, from Monday till Friday at 1:20 p.m. (right after the morning session of talks). Lunches will be served in cafeteria 'Plastyczna' in the Institute of Computer Science.

Guided city walk. On Tuesday we invite all participants for a guided tour of the city, with special focus on the history of the University of Wroclaw. We are invited for this tour by the vice-rector of the University of Wroclaw, prof. Adam Jezierski, a chemist, science popularizer, and enthusiast of history of the city of Wroclaw and the university. The essential part of the tour starts at 2:30 p.m. at the entrance to the Museum of University of Wroclaw, at pl. Uniwersytecki 1, see Map 1, but we also plan to walk there, from the Institute, departing at 2 p.m. (right after lunch). The tour will finish around 5-5:30 p.m.

Picnic/banquet. All official conference participants are invited to the conference banquet, in the form of a picnic, which will take place on Thursday, July 2nd, starting from 6 p.m., in the backyard of the Mathematical Institute of Polish Academy of Sciences (address: Kopernika 18, see Map 2). This picnic will be a special occasion to celebrate the 60th birthday of Tadeusz Januszkiewicz.

Printing posters. If you plan to present a poster during the poster session, there should be no problem with printing your poster here in Wroclaw. There are some places where you can do it at no more than 5 minutes distance from the Mathematical Institute (see Map 1). The approxiamte cost is no more than 40 PLN for A1, and no more than 80 PLN for A0 size. If necessary, we can provide assistance. Poster session is scheduled for Wednesday at 2 p.m., so there will be time to do such printing.

Institute facilities. The library and the reading room are located on the level 800, open from 8 a.m to 7 p.m. in June and from 8 a.m. to 3 p.m. in July. In the reading room there are computers with internet access available. The classrooms with blackboards are located on the level 600 and 700. Chalk is provided at the reception desk beside the side entrance (the one with the stairs).

Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:50	registration 9:00-9:30	Mosher	Panov	Martin	Garncarek
10:10-11:00	Bridson	Osajda	Arzhantseva	Burger	Okun
	coffee				
11:30-12:00	Nucinkis	Strzałkowski	Antoniuk	Pawlik	Scott
12:20-13:10	Caprace	Farrell	Leary	Bożejko	Przytycki
13:20-	lunch				
14:00-15:00		Guided city walk	Poster session		
15:00-15:50	Weinberger		Bader	Fujiwara	
16:00-16:30	Riley		Cordes	Marcinkowski	
	coffee		coffee		
17:00-17:50	Osin		Dymarz		

The opening ceremony will be on Monday at 10:00.
There will be a picnic on Thursday at 18:00.

Abstracts

Sylwia Antoniuk
Polish Academy of Sciences, Poland

On the threshold for freeness of the random triangular group.

We consider the model $\Gamma(n.p)$ of the random triangular group, which is a group give by a random group presentation with n generators and relators of length three, where each relkator appears independently with probability $p = 3Dp(n)$. It turns out that the behavior of the random group $\Gamma(n.p) =$ with respect to some interesting group properties depends strongly on the probability p and admits the so-called threshold behavior. In particular, the property of being a free group admits such a behaviour which is the main result presented in the talk. We will show that there is a constant $C > 0$ such that for $pn^2 < C$ with probability tending to 1, the random group $\Gamma(n.p)$ is a free group, whereas for $pn^2 > C$ with probability tending to 1 the group is not free.

This is a joint work with Tomasz Łuczak, Tomasz Prytuła, Piotr Przytycki and Bartosz Zaleski.

Goulnara Arzhantseva
University of Vienna, Austria

Almost implies near phenomenon in groups.

We prove that the commutator is stable in permutations endowed with the Hamming distance, that is, two permutations that almost commute are near two commuting permutations. Our result extends to k-tuples of almost commuting permutations, for any given k, and allows restrictions, for instance, to even permutations.

This is a joint work with Liviu Paunescu (Bucharest). It is partially supported by my ERC grant ANALYTIC no. 259527.

Uri Bader
Technion, Haifa, Israel

Linearity vs. non-linearity of some automorphism groups of buildings.

An 'affine building' is a geometric object attached to algebraic groups over local fields by a theory developed by Bruhat and Tits in a way parallel to Cartan's more familiar theory of symmetric spaces. Nevertheless, there is a

striking difference: in rank 1 and 2 one can find buildings which are not attached to any algebraic group (this never happens for symmetric spaces, nor for higher-rank affine buildings). One then asks: for such 'exotic' buildings, could the automorphism group be linear at all?
In a recent joint work with Caprace and Lecureux we give a negative answer to this question. Our method involves a combination of geometry and ergodic theory. It is built on a previous joint work with Furman regarding algebraic representation of ergodic actions.

Marek Bożejko
University of Wrocław, Poland

Length functions on Coxeter groups with applications

We consider two length functions on Coxeter group (W, S), namely $|w| := min\{n : w = s_1 s_2 \dots s_n, s_i \in S\}$, and $||w|| := min\{\#T : w = s_1 s_2 \dots s_n, s_i \in T \subset S\}$. We prove that they are conditionally positive definite or even we have stronger operator version. This implies that all Coxeter groups have stronger Haagerup property and infinite Coxeter groups are not Kazhdan in stronger sense so this is extension of the results of T.Januszkiewicz, R.Spatzier and myself from 1986. We also give characterization of radial functions on (W, S) with respect the length $|\ \ |$, positive definite functions on the infinite permutation group and on infinite hyperoctahedral group. Also the second length function $||\ \ ||$ is also conditionally negative definite on each Coxeter group W and this has strong consequences like:

(1) The set of generators S of the Coxeter group (W, S) is Sidon set i.e. every bounded real function on S can be extended to positive definite.
(2) The operator-Khinchine inequality holds on S.
(3) The classical normal law $N(0, 1)$ is infinitely divisible in the free probability of Voiculescu (paper in Adv.Math. by Belinschi, Bożejko, Lehner, Speicher).

The results are from the paper 'Positive definite functions on coxeter groups with applications to operator spaces and noncommutative probability' by Marek Bożejko, Światosław R. Gal and Wojciech Młotkowski.

Martin Bridson
University of Oxford, UK

Profinite rigidity for fundamental groups of low-dimensional orbifolds.

In this talk I will discuss what is known about the extent to which fundamental groups of orbifolds of dimension at most 3 are determined by their finite quotients. In particular, I will explain recent work showing that the

fundamental groups of punctured torus bundles can be distinguished from each other and from other 3-manifold groups by means of their profintie completions. This is joint work with Alan Reid (Texas) and Henry Wilton (Cambridge)

Marc Burger
ETH Zürich, Switzerland

On lattices in products of trees

Cocompact lattices in products of trees are finitely presented groups exhibiting far stranger behavior than their Lie group siblings. In this talk we report on recent work concerning their bounded cohomology; this is joint work with A.Iozzi, as well as work of A.Iozzi, A.Sisto, and C.Pagliantini.

Pierre-Emmanuel Caprace
UC Louvain, Belgium

From amenable $CAT(0)$ groups to Tits buildings

The only proper $CAT(0)$ spaces admitting a cocompact isometric action of a discrete amenable group are (quasi)flats. The goal of this talk is to describe what happens if the amenable group is allowed to be non-discrete.

Matthew Cordes
Brandeis University, USA

Morse boundaries of proper geodesic metic spaces.

I will introduce a new type of boundary for proper geodesic spaces, called the Morse boundary, that is constructed with equivalence classes of geodesic rays that identify the 'hyperbolic directions' in that space. (A ray is Morse if quasi-geodesics with endpoints on the ray stay bounded distance from the ray). This boundary is a quasi-isometry invariant and a visibility space. In the case of a proper CAT(0) space the Morse boundary generalizes the contracting boundary of Charney and Sultan and in the case of a proper Gromov hyperbolic space this boundary is the Gromov boundary. I will also discuss the Morse boundary of the mapping class group.

See: arXiv:1502.04376

Tullia Dymarz
University of Wisconsin, Madison, USA

Non-rectifiable Delone sets in amenable groups.

In 1998 Burago-Kleiner and McMullen constructed the first examples of coarsely dense and uniformly discrete subsets of R^n that are not biLipschitz equivalent to the standard lattice Z^n. Similarly we find subsets inside the three dimensional solvable Lie group SOL that are not bilipschitz to any lattice in SOL. The techniques involve combining ideas from Burago-Kleiner with quasi-isometric rigidity results from geometric group theory.

Tom Farrell
Tsinghua University, Beijing, China

Bundles with extra geometric structure.

This talk will report on joint work with several researchers including Pedro Ontaneda, Andrey Gogolev, Zhou Gang, Dan Knopf, Igor Belegradek and Vitali Kapovitch. We investigate smooth fiber bundles whose concrete fibers are equipped with Riemannian metrics with sectional curvatures constrained to lie in an interval I of real numbers. Prominent among these will be $I = (-\infty, 0)$, $(\frac{1}{4}, 1]$ and $[0, \infty)$.

Koji Fujiwara
Kyoto University, Japan

Geometry of Contracting Geodesics.

One coarse feature of a hyperbolic space is that geodesics are contracting. That is if L is any geodesic then there exists B such that the nearest point projection to L of any metric ball disjoint from L has diameter at most B. We will discuss a space with some but maybe not all geodesics are contracting, and its application to group theory. An example is a Teichmuller space. This is a joint work with Bestvina and Bromberg.

Łukasz Garncarek
University of Wrocław, Poland

Boundary representations of hyperbolic groups.

In my talk i will present a canonical construction of a large family of unitary representations of an arbitrary Gromov hyperbolic group. I will show that they are irreducible and inequivalent. This generalizes the results of Bader and Muchnik applying to fundamental groups of closed negatively curved manifolds.

Ian Leary
University of Southampton, UK

Uncountably many groups of type FP.

A group G is type F if it admits a finite $K(G,1)$. Since there are only countably many finite group presentations, there are only countably many groups of type F. Roughly speaking, type FP is an 'algebraic shadow' of type F. In the 1990s Bestvina and Brady constructed groups that are type FP but not finitely presented. Since Bestvina-Brady groups occur as subgroups of type F groups, there are only countably many of them. We construct uncountably many groups of type FP. As a corollary, not every group of type FP is a subgroup of a finitely presented group.

Michał Marcinkowski
University of Wrocław, Poland

Macroscopically large rationally inessential manifolds.

We construct examples of manifolds whose universal covers are large in topological sense but small in homological sense. Such manifolds provide counterexamples to a recent conjecture of A.Dranishnikov. The construction uses Coxeter groups and associated Davis complexes. A motivation to study such manifolds comes from the conjecture of Gromov. It says, that the fact that a smooth closed manifold admits a metric of positive scalar curvature is visible in the topology of its universal cover as a deficiency of the macroscopic dimension. Such a phenomenon takes place when we speak of positive sectional curvature (then the universal cover is compact). In the case of positive scalar curvature no such a result is yet known.

Alexandre Martin
University of Vienna, Austria

The cubical geometry of Higman's group

Higman's group was constructed as the first example of a finitely presented infinite group without non-trivial finite quotients. Despite this pathological behaviour, I will describe striking similarities with mapping class groups of hyperbolic surfaces, outer automorphisms of free groups and special linear groups over the integers. The main object of study will be the cocompact action of the group on a $CAT(0)$ square complex naturally associated to its standard presentation. This action, which turns out to be intrinsic, can be used to explicitly compute the automorphism group and outer automorphism group of the Higman group, and to show that the group is both Hopfian and co-Hopfian. A surprisingly stronger result actually holds: Every non-trivial morphism from the Higman group to itself is an automorphism.

Lee Mosher
Rutgers University, Newark, USA

Hyperbolic actions and second bounded cohomology for subgroups of $Out(F_n)$.

Motivated by a general desire to understand the large scale geometry of $Out(F_n)$, and a specific desire to understand second bounded cohomology of subgroups of $Out(F_n)$, we shall study various actions of subgroups of $Out(F_n)$ on hyperbolic complexes, and the dynamics of individual elements of those actions. As an application, we shall prove that finitely generated subgroups $H < Out(F_n)$ satisfy an alternative: either H is virtually abelian; or the second bounded cohomology of H with real coefficients is of uncountable dimension. This work is joint with Michael Handel.

Brita Nucinkis
Royal Halloway, University of London, UK

The rational homology of generalized Richard Thompson groups.

Richard Thompson's group F is defined to be the group of orientation preserving piecewise linear homeomorphisms of the unit interval with breakpoints dyadic integers and slopes powers of 2. Thompson also defined the groups T and V as certain groups of homeomorphisms of the circle and the Cantor-set respectively. All three groups have surprising properties. T and V are infinite, have arbitrarily high torsion, are simple and finitely presented. F is a rare example of a torsion-free group of type FP with infinite cohomological dimensions.

It was shown by K. Brown that V is Q-acyclic. Here we show that for generalised Thompson groups, which turn up as automorphism groups of certain Canto-algebras, the rational homology vanishes in high dimensions. An explicit computation for the rational homology is given for Brin's group $2V$.

This is joint work with C. Martnez-Perez and M. Varisco.

Boris Okun
University of Wisconsin - Milwaukee, USA

Action dimension of right-angled Artin groups.

The action dimension of a group G, $actdim(G)$, is the least dimension of a contractible manifold which admits a proper G-action. I will explain a partial computation of *actdim* for the right-angled Artin groups and why it is interesting from the point of view of L^2-homology.

This is a joint work with Grigori Avramidi, Mike Davis, and Kevin Schreve.

Damian Osajda
Polish Academy of Sciences and University of Wroclaw, Poland

Groups with asymptotic asphericity properties.

Free groups and small cancellation groups are well-known examples of groups that asymptotically 'do not contain spheres'. It is an interesting phenomenon that there are higher dimensional groups with similar properties. Among them are some weakly systolic groups, in particular, systolic groups. I will present exotic features of groups with such asphericity properties.

Denis Osin
Vanderbilt University, USA

Invariant random subgroups of groups acting on hyperbolic spaces.

I will survey recent results on invariant random subgroups of non-elementary isometry groups of hyperbolic spaces.

Dmitri Panov
King's College London, UK

Ramification conjecture and complex line arrangements with aspherical complement.

This talk is based on a joint work with Anton Petrunin, where we study polyhedral spaces and their ramifications. The ramification of a polyhedral space is the metric completion of the universal cover of its regular locus.

We concentrate on non-negatively curved polyhedral metric of two origins: quotients of Euclidean space by a discrete group of isometries and polyhedral metrics on CP^2 with singularities at a collection of complex lines. In the former case we conjecture that such quotients space always have a $CAT[0]$ ramification and prove this in several cases. In the latter case we prove that the ramification is $CAT[0]$ and deduce that complex line arrangements in CP^2 studied by Hirzebruch have aspherical complement.

Dominika Pawlik
University of Warsaw, Poland

Gromov boundaries of hyperbolic groups as Markov compacta.

A Markov compactum (as defined by Dranishnikov) is the limit of an inverse sequence of simplicial complexes in which all the simplices can be

given finite labels so that every two simplices with equal label have isomorphic pre-images (where the isomorphism should also preserve simplex labels). This property, after some subtle strengthening, enables to encode the whole inverse sequence using a finite description, where decoding resembles running a finite-state automaton. It turns out that the Gromov boundary of any finitely generated hyperbolic group admits such presentation, which gives a convenient description of the boundary and helps in designing algorithms verifying certain its topological properties. Moreover, the dimension of simplices can be bounded by the dimension of their limit. In fact, the resulting Markov compactum can be also equipped with a natural metric, quasi-conformally equivalent with the natural (i.e. Gromov visual) metric on the boundary.

It turns out that the methods used in proving these claims also allow to generalize (from the torsion-free case to all hyperbolic groups) the result of Coornaert and Papadopoulos, which provides a presentation of the boundary as a quotient of two infinite-word 'regular' (in an appropriately adjusted sense) languages, which they call a semi-Markovian space.

[D. Pawlik, Gromov boundaries of Markov compacta, preprint, 2015, http://arxiv.org/pdf/1503.04577.pdf]

Piotr Przytycki
McGill University, Montreal, Canada and Polish Academy of Sciences, Poland

Arcs intersecting at most once.

I will show that on a punctured oriented surface with Euler characteristic $\chi < 0$, the maximal cardinality of a set of essential simple arcs that are pairwise non-homotopic and intersecting at most once is $2|\chi|(|\chi|+1)$. This gives a cubic estimate in $|\chi|$ for a set of curves pairwise intersecting at most once, which to a great extent answers a question of Farb and Leininger.

Tim Riley
Cornell University, USA

Taming the hydra: the word problem and extreme integer compression.

For a finitely presented group, the Word Problem asks for an algorithm which declares whether or not words on the generators represent the identity. The Dehn function is the time-complexity of a direct attack on the Word Problem by applying the defining relations.

A 'hydra phenomenon' gives rise to novel groups with extremely fast growing (Ackermannian) Dehn functions. I will explain why, nevertheless, there are efficient (polynomial time) solutions to the Word Problems of these

groups. The main innovation is a means of computing efficiently with compressed forms of enormous integers.

This is joint work with Will Dison and Eduard Einstein.

Rick Scott
Santa Clara University, USA

Growth series for Eulerian cube complexes.

An compact n-dimensional nonpositively curved cube complex is *Eulerian* if it has the same local Euler characteristics as an n-dimensional manifold. We show that the growth series $G(t)$ for such a cube complex satisfies the reciprocity formula $G(1/t) = 3D(-1)^n G(t)$.

Karol Strzałkowski
Polish Academy of Sciences, Poland

Lipschitz simplicial volume and piecewise straightening.

Lipschitz simplicial volume is a metric version of the simplicial volume, which is a homotopy invariant of manifolds with many connections with Riemannian structure. On the one hand, Lipschitz version of this invariant is more suitable for studying non-compact Riemannian manifolds of finite volume, but on the other there are fewer suitable tools to study it. One of such tools is the straightening procedure, which allows one to simplify singular chains used to compute simplicial volume, but is usually applicable only on manifolds with non-positive sectional curvature. We introduce the piecewise straightening procedure, which is a concrete generalization of the classical straightening to the case of manifolds with an upper bound on the sectional curvature. This generalization allows us to prove e.g. proportionality principle for manifolds with bounded curvature, which is a classical result for compact manifolds and states that if two Riemannian manifolds have isometric universal covers, then their Lipschitz simplicial volume is proportional to Riemannian volume.

Shmuel Weinberger
University of Chicago, USA

Indistinguishable manifolds.

Joint work with Dranishnikov and Ferry). We view two manifolds as being indistinguishable, if there are uniformly contractible metrics (with a given contractibility function) on both wherein they are arbitrarily close together

(in Gromov-Hausdorff space). Indistinguishable manifolds are (simple) homotopy equivalent, and have the same rational Pontrjagin classes, and cannot be distinguished by many invariants.

Many manifolds, such as spheres, lens spaces, or aspherical manifolds have no indistinguishable partners, (at least in high dimensions), as predicted by the Borel conjecture, but there are manifolds that do have these.

We shall explain this, as well as why when the fundamental group of a manifold is a lattice in a connected Real Lie group (so e.g. finite or abelian) or word hyperbolic, a manifold can have only finitely many partners. On the other hand, for a slightly modified version of a Bestvina-Brady group, there is a manifold that is indistinguishable from infinitely many others.

This is joint work with Dranishnikov and Ferry.

Venues near the Institute.

Water equipment rental The Gondola Bay (Zatoka gondoli). One can rent here a kayak, a row boat or a small motor boat (no licence needed). Location: point G on Map 1. Open from 8:00 to 20:00. More on http://www.gondole.eu/en.

St. John the Baptist's Cathedral. Gothic cathedral with neoghotic additions, located in Ostrów Tumski, point K on Map 1. The highlight of the Cathedral is the panoramic view from one of its towers. There is an elevator which takes you to the top. Opening hours: the Cathedral: Mon-Sat 09:45 - 17:30, Sun 14:00 - 16:00, the Tower: Mon 12:00- 17:00, Tue-Sat 10:00-17:00, Sun 14:00-16:00.

Botanical garden (Ogród botaniczny). Located north to the Cathedral. The south entrance to the Garden is located at the end of Kapitulna street, point BG on Map 1. The ticket office is open from 8:00 to 18:00, the Garden itself is open till 20:00.

Other venues.

Panorama Racławicka and National Museum. Panorama Racławicka is located in a huge round building in Park Słowackiego, point P on Map 1. It is a large painting (15x114m) conceived as a patriotic manifestation commemorating the 100th anniversary of the victorious Battle of Racławice. Entrance ticket to the Panorama is also valid for the National Museum. Opening hours: Panorama: Mon-Sun 9:00-17:00, shows are presented every 30 min, National Museum: not Sat 10:00-17:00, Sat 10:00-18:00. Admission to the Museum is free on Saturday.

Centennial Hall and the fountain. Centennial Hall (Hala Stulecia, Jahrhunderthalle), build in 1913, commemorates the 100th anniversary of the victorious Battle of Leipzig. You can see the interiors of the Hall and the Discovery Center. The Hall is located in the south part of Park Szczytnicki, a perfect place for a walk. At the nearby fountain there is a music-water-light show at every full hour from 18:00 till 22:00.

Zoo (Ogród Zoologiczny) and Africarium. Very close to the Centennial Hall one can find the Zoo with its Africarium, a complex presenting various ecosystems connected with water environment of Africa. More on http://www.zoo.wroclaw.pl.

Transport information.

A single ticket costs 3zł, and you can buy it either at a bus/tram stop, or in a ticket machine in the bus/tram (which offers English language interface). Note that ticket machines in the bus/tram accept only payment cards.
There is a convenient application available on wroclaw.jakdojade.pl/en, where you can search for tram and bus connections.

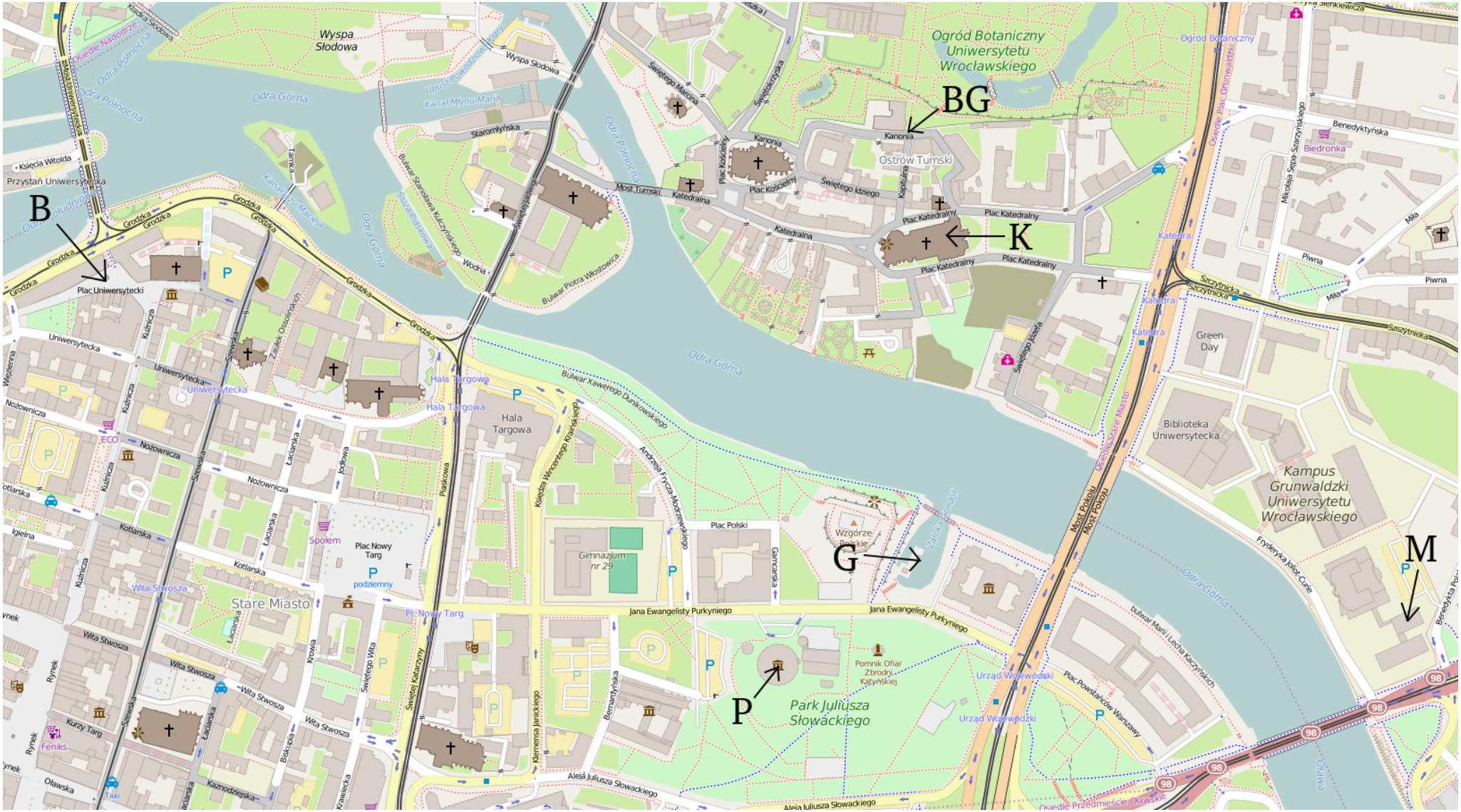


FIGURE 1. © OpenStreetMap contributors. Scale: 1:10000. M: Mathematical Institute, B: The entrance to the main building of the University, K: Cathedral, BG: Botanical Garden, G: Gondola Bay, P: Panorama Racławicka.

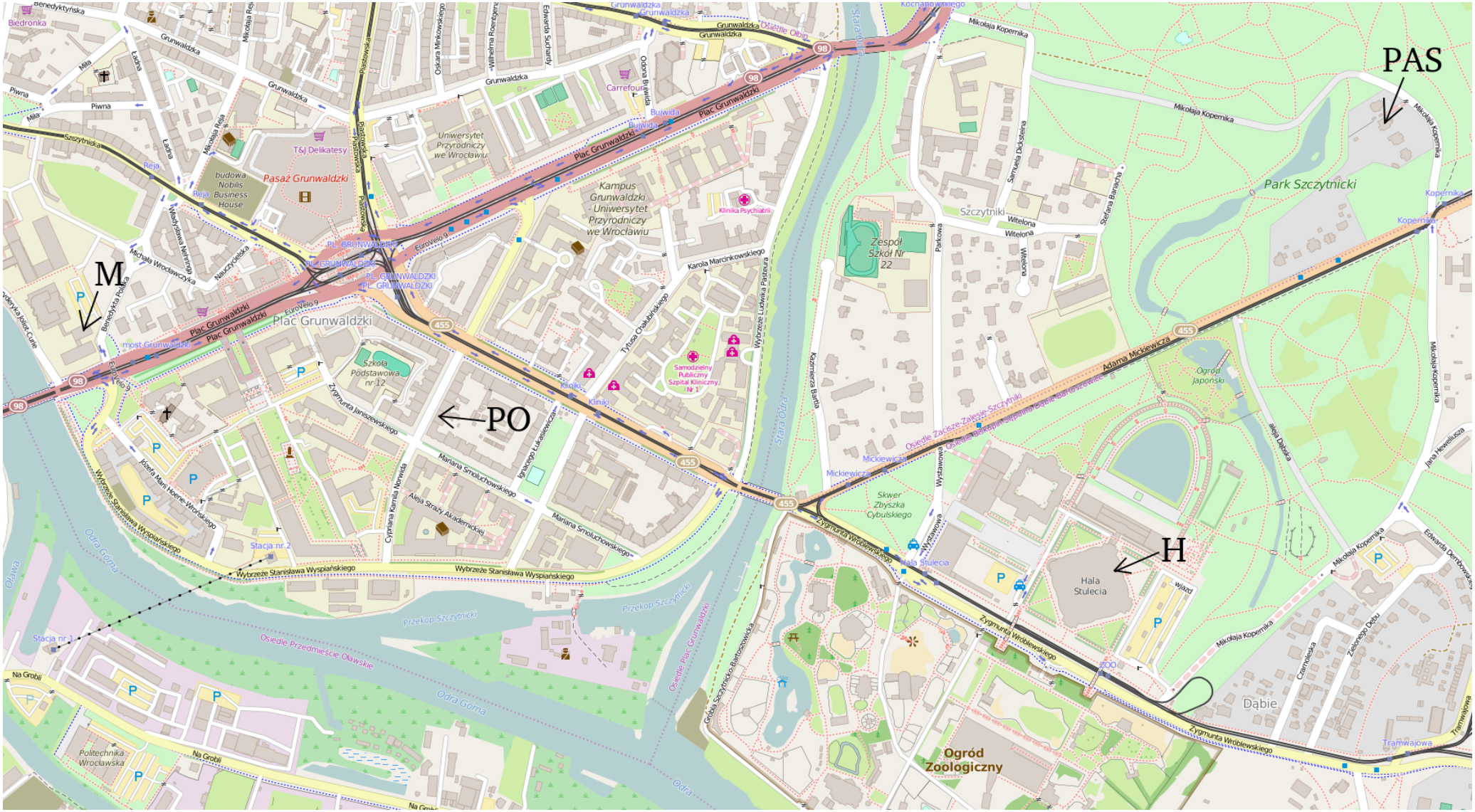


FIGURE 2. Scale: 1:15000. © OpenStreetMap contributors. M: Mathematical Institute, H: Centennial Hall, PAS: Academy of Sciences, PO: Printing office.

Participants

Carolyn Abbott
Sylwia Antoniuk
Goulnara Arzhantseva
Uri Bader
Agnieszka Bier
Zbigniew Błaszczyk
Marek Bożejko
Martin Bridson
Marc Burger
Matthieu Calvez
Pierre-Emmanuell Caprace
Matthew Cordes
Maciej Czarnecki
Francois Dahmani
Michael Davis
Thomas Delzant
Jan Dymara
Tullia Dymarz
Tomasz Elsner
Tom Farrell
Alexander Felshtyn
Koji Fujiwara
Światosław Gal
Łukasz Garncarek
Victor Manuel Gonzalez Moreno
Bogusław Hajduk
Julia Heller
Waldemar Hołubowski
Alessandra Iozzi
Tadeusz Januszkiewicz
Jarek Kędra
Sang-hyun Kim
Linus Kramer
Erika Kuno
Ioana-Claudia Lazar
Ian Leary
Michał Marcinkowski
Alexandre Martin
Wacław Marzantowicz
John Mckay
Vaghan Mihaelian
Lee Mosher
Piotr Nowak
Brita Nucinkis
Boris Okun
Bogdana Oliynyk
Damian Orlef
Damian Osajda
Denis Osin
Dmitri Panov
Dominika Pawlik
Janusz Przewocki
Tomasz Prytuła
Piotr Przytycki
Tim Riley
Michah Sageev
Petra Schwer
Richard Scott
Karol Strzałkowski
Witali Suszczański
Jacek Świątkowski
Krzysztof Święcicki
Henryk Toruńczyk
Olga Varghese
Bronisław Wajnryb
Shmuel Weinberger
Weronika Woś
Xiaolei Wu

Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:50	registration 9:00-9:30	Mosher	Panov	Martin	Garncarek
10:10-11:00	Bridson	Osajda	Arzhantseva	Burger	Okun
	coffee				
11:30-12:00	Nucinkis	Strzałkowski	Antoniuk	Pawlik	Scott
12:20-13:10	Caprace	Farrell	Leary	Bożejko	Przytycki
13:20-	lunch				
14:00-15:00		Guided city walk	Poster session		
15:00-15:50	Weinberger		Bader	Fujiwara	
16:00-16:30	Riley		Cordes	Marcinkowski	
	coffee		coffee		
17:00-17:50	Osin		Dymarz		

The opening ceremony will be on Monday at 10:00.
There will be a picnic on Thursday at 18:00.