

Introductory Workshop:
Geometric Representation Theory
September 2 to 5, 2014
MSRI, Berkeley, CA, USA

Organizers:

David Ben-Zvi (University of Texas)

Kevin McGerty (University of Oxford)

1. OVERVIEW

The Introductory Workshop on Geometric Representation Theory, organized by David Ben-Zvi (U. of Texas at Austin) and Kevin McGerty (Oxford), took place at MSRI September 2-5 2014. The workshop was extremely well attended, with the spacious Simons Auditorium filled to near capacity for the entire week. There were five lectures a day (for a total of twenty), with three morning talks and two afternoon talks, and lunch and two tea breaks providing opportunities for discussion.

1.1. Speakers.

- Pramod Achar (Louisiana State University), 3 lectures
- Dmitro Arinkin (University of Wisconsin), 3 lectures
- Paul Baum (Penn State University), 1 lecture
- Edward Frenkel (University of California Berkeley), 2 lectures
- Victor Ginzburg (University of Chicago), 3 lectures
- Tom Hales (University of Pittsburgh), 3 lectures
- Nick Proudfoot (University of Oregon), 2 lectures
- Olivier Schiffmann (Jussieu), 3 lectures

The speakers demonstrated remarkable expository skill, in addition to their celebrated research. Most of the speakers (Achar, Arinkin, Hales, Ginzburg and Schiffmann) gave three-part mini courses, allowing for in-depth tours of areas of great current interest, coupled with two-part vignettes (Frenkel, Proudfoot) and a concluding lecture (Baum).

The workshop was a resounding success, with numerous participants approaching the organizers to express their appreciation of the clear and engaging lectures. The positive reactions ranged from graduate students (e.g. Lee Cohn from UT Austin claimed it was by far the best of many introductory workshops he'd attended) to legends of the field (Clay Professor Joseph Bernstein attended the entire workshop and wrote "The lectures were very beneficial for myself" and inquired after the written notes).

2. LECTURES

2.1. The Langlands program. Speakers: Dmitro Arinkin, Edward Frenkel, Tom Hales

One of the most important motivating philosophies in geometric representation theory (and in many adjacent fields) is the Langlands correspondence, which seeks to understand the theory of reductive groups in various contexts (local fields, number fields, function fields of curves) in terms of data associated to their "dual group". In the abelian case this is an essentially classical story, but in the case of higher rank we still have, despite spectacular achievements, many mysteries to decipher. As such it was clear that an introductory workshop should provide some overview of this fascinating web of conjectures and results.

Exposing the classical theory, where one is interested in reductive groups over number fields, Prof. Hales gave a series of three talks with impressive breadth and clarity: starting from essentially the character theory of finite groups, his talks provided a tour of the trace formula and the proof of the Fundamental Lemma, which is a remarkable story involving, among other things, a reduction to the setting of Lie algebras, model theoretic tools from logic which all one to deduce mixed characteristic results from equal characteristic ones (which Hales dubbed the

beginning of “logical representation theory”), and finally Ngô’s beautiful geometric arguments recasting endoscopy in geometric terms.

The work of Ngô has been one the resounded successes of the geometric theory in the Langlands program. The lectures of Prof. Frenkel elegantly described the various contexts in which a Langlands program exists: number fields, function fields, the geometric theory of Beilinson and Drinfeld, and most recently the connection with topological field theories and S -duality in mathematical physics. The task of understanding the analogies and inter-relations between these different contexts is an important one, and Prof. Frenkel’s lectures ended with a discussion of the role of the trace formula in context of the geometric Langlands correspondence.

Recently there has been significant progress in our understanding of the geometric Langlands correspondence: work of a number of people including Dennis Gaitsgory and our speaker, Prof. Arinkin, has led to a categorical version of the correspondence as a vastly generalized Fourier transform in which categories of sheaves replace spaces of functions. Namely, two geometric objects: the space of G -bundles on a curve on the one hand and the space of local systems on that curve, are linked by a categorical equivalence between D -modules on the one space and coherent sheaves on the other. As in classical harmonic analysis, there are many possible “function spaces” corresponding to growth and regularity condition, and the precise choice of categories needed is quite a subtle question, involving ideas from the rapidly developing field of derived algebraic geometry, among other things. Prof. Arinkin’s lectures gave an accessible introduction to these exiting new developments.

2.2. Quiver varieties and Hall algebras. Speakers: Victor Ginzburg, Nick Proudfoot and Olivier Schiffmann.

There are perhaps two most important families of spaces which arise in geometric representation theory: the first, perhaps most natural, are the homogenous spaces and their subvarieties such as Schubert varieties. The second, whose importance goes back to the seminal work of Ringel on Hall algebras and quantum groups, are quiver varieties, which are moduli spaces of representations of quivers. Work of Lusztig and Nakajima amongst others revealed how topological invariants of these spaces realize highest weight representations of Kac-Moody algebras, and looking more deeply, categories of sheaves on these spaces yield “categorifications” of the algebras and their representations, a process whereby vector spaces are replaced with categories, and linear maps by functors between categories. This process has driven a considerable body of research in recent years, using a broad range of techniques from combinatorics, algebra and geometry, and serves to reveal a deep combinatorial rigidity in the representation theory of these algebras. In the opposite direction, the representation theory also allows one to organize and understand the topological invariants associated to moduli spaces: the Nakajima-Grojnowski work on the cohomologies of Hilbert schemes being one celebrated example of this.

The lectures of Prof. Ginzburg gave an introduction to the construction and geometric properties of quiver varieties, reviewing general constructions such as Hamiltonian reduction, geometric invariant theory, and features specific to quivers such as the McKay correspondence and the construction of tautological bundles.

The lectures of Prof. Schiffmann related the subject of quiver varieties to the problem of computing the cohomology of the space of vector bundles on a curve using the structure of a Hall algebra to control counting rational points over a

finite field. The juxtaposition of his and Prof. Ginzburg’s lectures made clear the analogies between the different settings for geometric representation theory and its overall unity.

Recently work of Beauville, Namikawa and others have suggested a context where quiver varieties and the geometry of flag varieties (or rather their cotangent bundles) naturally coexist. This is the class of symplectic varieties and their resolutions. Prof. Proudfoot’s lectures gave an introduction to this theory and how to view it as a general setting for representation theory. He then explained a fascinating conjectural correspondence between pairs of such varieties known as “symplectic duality” (developed by Proudfoot and collaborators), which also appeared in the conclusion to Prof. Ginzburg’s lectures.

2.3. Geometric representation theory of finite and p-adic groups. Speakers: Pramod Achar and Paul Baum.

One of the main driving forces for geometric representation theory has been the representation theory of finite and p-adic reductive groups — the groups obtained by taking the points of an algebraic group, such as the group of invertible matrices, over a finite or p-adic field. Indeed one of the greatest achievements of the subject is Lusztig’s construction of the characters of all irreducible complex representations of finite reductive groups (in particular, of the vast majority of finite simple groups) using his theory of character sheaves. At the heart of this theory is Springer theory, which originates with Springer’s realization of Weyl group representations in the cohomology of subvarieties of the flag variety of the corresponding Lie group, or equivalently in the topology of the Springer resolution of the nilpotent cone by the cotangent bundle to the flag variety. Professor Achar’s lectures gave a methodical and insightful development of Springer theory from its origins, through Lusztig’s generalized Springer correspondence, and up to the cutting edge of current work (by Achar and collaborators) developing an analog for the still wild frontier of representations in finite characteristic.

Prof. Baum’s lecture concluded the workshop with a geometric invitation to the representation theory of p-adic groups. He explained the Bernstein center, the fundamental space parametrizing representations, and described an intriguingly simple conjectural picture (a conjecture by Baum and collaborators, established in many important cases) for the structure of representations in a given component .

Organizers

First Name	Last Name	Institution
David	Ben-Zvi	University of Texas
Kevin	McGerty	University of Oxford

Speakers

First Name	Last Name	Institution
Pramod	Achar	Louisiana State University
Dima	Arinkin	University of Wisconsin
Paul	Baum	Pennsylvania State University
Victor	Ginzburg	University of Chicago
Thomas	Hales	University of Pittsburgh
Nicholas	Proudfoot	University of Oregon
olivier	schiffmann	Universite Paris-Sud (Orsay)

Introductory Workshop: Geometric Representation Theory

September 2-5, 2014

Schedule

Tuesday, September 2, 2014			
8:45 AM - 9:00 AM	Simons Auditorium		Welcome
9:00 AM - 10:00 AM	Simons Auditorium	Thomas Hales	Introduction to the Langlands program and the Fundamental Lemma
10:00 AM - 10:30 AM	Atrium		Tea
10:30 AM - 11:30 AM	Simons Auditorium	Dima Arinkin	The Geometric Langlands Correspondence
11:30 AM - 12:30 PM	Simons Auditorium	Edward Frenkel	Gauge theory and Langlands duality
12:30 PM - 2:00 PM	Atrium		Lunch
2:00 PM - 3:00 PM	Simons Auditorium	Victor Ginzburg	Geometry of Quiver varieties
3:00 PM - 3:30 PM	Atrium		Tea
3:30 PM - 4:00 PM	Simons Auditorium	Olivier Schiffmann	Quivers, curves, Kac polynomials and the number of stable Higgs bundles
4:30 PM - 6:20 PM	Atrium		Reception

Wednesday, September 3, 2014			
9:00 AM - 10:00 AM	Simons Auditorium	Thomas Hales	Introduction to the Langlands program and the Fundamental Lemma
10:00 AM - 10:30 AM	Atrium		Tea
10:30 AM - 11:30 AM	Simons Auditorium	Dima Arinkin	The Geometric Langlands Correspondence
11:30 AM - 12:30 PM	Simons Auditorium	Pramod Achar	The Springer Correspondence
12:30 PM - 2:00 PM	Atrium		Lunch
2:00 PM - 3:00 PM	Simons Auditorium	Victor Ginzburg	Geometry of Quiver varieties
3:00 PM - 3:30 PM	Atrium		Tea
3:30 PM - 4:30 PM	Simons Auditorium	Olivier Schiffmann	Quivers, curves, Kac polynomials and the number of stable Higgs bundles

Thursday, September 4, 2014			
9:00 AM - 10:00 AM	Simons Auditorium	Thomas Hales	Introduction to the Langlands program and the Fundamental Lemma
10:00 AM - 10:30 AM	Atrium		Tea
10:30 AM - 11:30 AM	Simons Auditorium	Pramod Achar	The Springer Correspondence
11:30 AM - 12:30 PM	Simons Auditorium	Edward Frenkel	Gauge theory and Langlands duality
12:30 PM - 2:00 PM	Atrium		Lunch
2:00 PM - 3:00 PM	Simons Auditorium	Victor Ginzburg	Geometry of Quiver varieties
3:00 PM - 3:30 PM	Atrium		Tea
3:30 PM - 4:30 PM	Simons Auditorium	Nicholas Proudfoot	Quantizations of symplectic resolutions, part I

Friday, September 5, 2014			
9:00 AM - 10:00 AM	Simons Auditorium	Dima Arinkin	The Geometric Langlands Correspondence
10:00 AM - 10:30 AM	Atrium		Tea
10:30 AM - 11:30 AM	Simons Auditorium	Pramod Achar	The Springer Correspondence
11:30 AM - 12:30 PM	Simons Auditorium	Nicholas Proudfoot	Quantizations of symplectic resolutions, part II
12:30 PM - 2:00 PM	Atrium		Lunch
2:00 PM - 3:00 PM	Simons Auditorium	Olivier Schiffmann	Quivers, curves, Kac polynomials and the number of stable Higgs bundles
3:00 PM - 3:30 PM	Atrium		Tea
3:30 PM - 4:30 PM	Simons Auditorium	Paul Baum	Representations of p-adic groups

Participants

First Name	Last Name	Institution
Pramod	Achar	Louisiana State University
Darlayne	Addabbo	University of Illinois at Urbana-Champaign
Noah	Arbesfeld	Columbia University
Dima	Arinkin	University of Wisconsin
Aswin	Balasubramanian	University of Texas
Asilata	Bapat	University of Chicago
Paul	Baum	Pennsylvania State University
David	Ben-Zvi	University of Texas
Joseph	Bernstein	Tel Aviv University
Marc	Besson	Dickinson College
Alexandre	Bouayad	University of Cambridge
Alina	Bucur	University of California
Charlotte	Chan	University of Michigan
Hui	Chen	Kansas State University
Miaofen	Chen	East China Normal University
Jingren	Chi	University of Chicago
Emily	Cliff	University of Oxford
Lee	Cohn	University of Texas
Ben	Cox	College of Charleston
Zsuzsanna	Dancso	MSRI - Mathematical Sciences Research Institute
Hailong	Dao	University of Kansas
Gurbir	Dhillon	Stanford University
Tudor	Dimofte	Institute for Advanced Study
Anne	Dranovski	University of Toronto
Banafsheh	Farang-Hariri	Universite Paris-Sud (Orsay)
Peter	Fiebig	Friedrich-Alexander-Universitat Erlangen-Nurnberg
Dragos	Fratila	Universite de Paris VII (Denis Diderot)
Adam	Gal	Tel-Aviv University
Elena	Gal	Tel-Aviv University
Benjamin	Gammage	University of California, Berkeley
Iordan	Ganev	University of Texas
Emanuele	Ghedin	University of Oxford
Victor	Ginzburg	University of Chicago
Julien	Grivaux	Universite d'Aix-Marseille
Elmar	Grosse-Kloenne	Humboldt-Universitat
Shamgar	Gurevich	University of Wisconsin
Thomas	Haines	University of Maryland
Thomas	Hales	University of Pittsburgh
Paul	Hamacher	Technische Universitat Munchen
xiao	he	Laval University
Aron	Heleodoro	Northwestern University
Yotam	Hendel	Bar-Ilan University
Florian	Herzig	University of Toronto
Justin	Hilburn	University of Oregon
Quoc	Ho	University of Chicago
Richard	Hughes	University of Texas
Christine	Huyghe	Universite de Strasbourg I (Louis Pasteur)
Brian	Hwang	California Institute of Technology

Mee Seong	Im	University of Illinois at Urbana-Champaign
Pierre	Jalinieri	Universite de Paris VI (Pierre et Marie Curie)
Wayne	Johnson	University of Wisconsin
Hassan	Jolany	Universite de Lille I (Sciences et Techniques de Lille Flandres Artois)
Daniel	Juteau	Universite de Caen
Daniel	Kaplan	University of Texas
Kiran	Kedlaya	University of California, San Diego
Noureen	Khan	University of North Texas
Sher	Khan	University of Ottawa
Clemens	Koppensteiner	Northwestern University
Michael	Lau	Laval University
Soo Hong	Lee	Massachusetts Institute of Technology
Liping	Li	University of California
Hao	Li	Johns Hopkins University
Seonhee	Lim	Seoul National University
Chia-Cheng	Liu	University of Toronto
Wen	Liu	University of California, Davis
Ariane	Mezard	L'Institut de Mathematiques de Jussieu
Viswambhara	Makam	University of Michigan
Shotaro	Makisumi	Stanford University
Madhusudan	Manjunath	UC Berkeley Math Faculty
Jacob	Matherne	Louisiana State University
Akhil	Mathew	University of California, Berkeley
Jasmin	Matz	Rheinische Friedrich-Wilhelms-Universitat Bonn
Kevin	McGerty	University of Oxford
George	Melvin	University of California, Berkeley
Stephen	Morgan	MSRI - Mathematical Sciences Research Institute
Gilbert	Moss	University of Texas
Lang	Mou	University of California, Davis
James	Mracek	University of Toronto
Dinakar	Muthiah	University of Toronto
Emily	Norton	Kansas State University
Jacinta	Perez Gavilan Torres	University of Cologne
Roger	Plymen	University of Southampton
Dipendra	Prasad	Tata Institute of Fundamental Research
Nicholas	Proudfoot	University of Oregon
Surya	Raghavendran	University of Texas
Sam	Raskin	Massachusetts Institute of Technology
Kenneth	Ribet	University of California, Berkeley
Sean	Rostami	University of Wisconsin
David	Rush	Massachusetts Institute of Technology
Sergei	Sagatov	University of Chicago
Barbara	Schalke	Friedrich-Alexander-Universitat Erlangen-Nurnberg
Henry	Scher	University of Chicago
olivier	schiffmann	Universite Paris-Sud (Orsay)
Lucius	Schoenbaum	Louisiana State University
Gus	Schrader	University of California, Berkeley
Michael	Schuster	University of North Carolina
Travis	Scrimshaw	University of California, Davis
Friederike	Steglich	Friedrich-Alexander-Universitat Erlangen-Nurnberg
Sean	Tang	University of Utah

Minh-Tam	Trinh	University of Chicago
Cheng-Chiang	Tsai	Harvard University
Bolor	Turmunkh	University of Illinois at Urbana-Champaign
Yakov	Varshavsky	Hebrew University
Monica	Vazirani	University of California, Davis
Kevin	Walker	Microsoft Station Q
Robin	Walters	University of Chicago
Jonathan	Wang	University of Chicago
Junqi	Wang	Rutgers University
Alex	Weekes	University of Toronto
Zhaoting	Wei	Indiana University
Tian An	Wong	City University of New York (CUNY)
Michael	Wong	University of Texas
Xinli	Xiao	Kansas State University
Yaping	Yang	MSRI - Mathematical Sciences Research Institute
Philsang	Yoo	Northwestern University
Shilin	Yu	University of Pennsylvania
Qiaochu	Yuan	University of California, Berkeley
Naizhen	Zhang	University of California, Davis
Qiao	Zhou	University of California, Berkeley
Alex	Zorn	University of California, Berkeley

Officially Registered Participant Information

Participants		120
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Gender		120
Male	76.67%	92
Female	20.83%	25
Declined to state	2.50%	3

Ethnicity*		120
White	49.17%	59
Asian	35.00%	42
Hispanic	0.00%	0
Pacific Islander	0.00%	0
Black	0.00%	0
Native American	0.00%	0
Mixed	4.17%	5
Declined to state	11.67%	14

* ethnicity specifications are not exclusive

67 responses

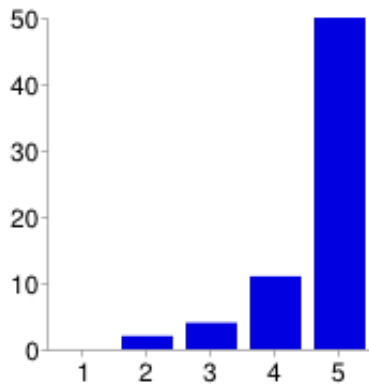
67 responses out of 120 participants = 56% response rate

[View all responses](#) [Publish analytics](#)

Summary

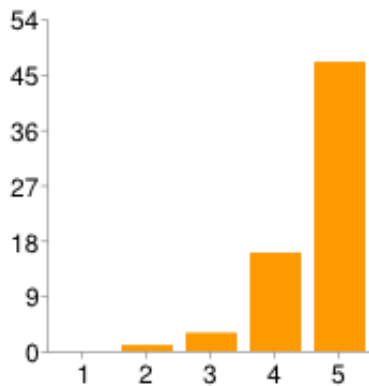
Workshop assessment

The workshop was intellectually stimulating



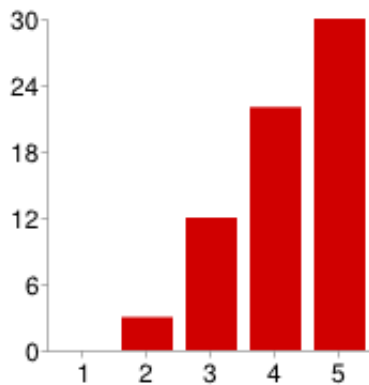
1	0	0%
2	2	3%
3	4	6%
4	11	16%
5	50	75%

The overall experience of the workshop was worthwhile



1	0	0%
2	1	1%
3	3	4%
4	16	24%
5	47	70%

The time between lectures was adequate for discussion



1	0	0%
2	3	4%
3	12	18%
4	22	33%
5	30	45%

Additional comments on the workshop organization

The organization was phenomenal!

I was an organizer, so perhaps shouldn't comment on that. Also, the time between talks for discussions was limited for me probably because I was an organizer!

Many of the talks too elementary

I liked the relatively small number of lectures and the lecture series format

The talks were very uneven, some of them pitched far too high. However, the talks by Hales and Frenkel were outstanding.

Time to talk between lectures was limited, particularly as many sessions ran overtime. This also made it harder to keep up by the end of the day (five long lectures with short breaks is both physically and mentally exhausting).

Not enough space for informal discussions

Excellent in every aspects!

overall great, though it would be nice to have tastier and more nutritious lunches (since restaurants are far away)

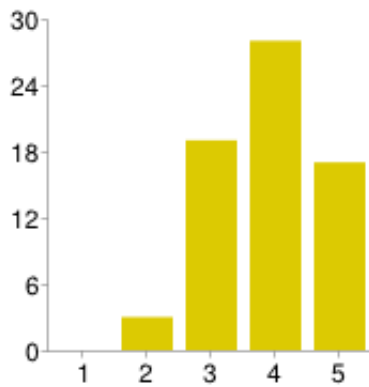
very good

Great lineup of speakers and topics.

I would have preferred a 2hour lunch break, and then having the talks run later into the afternoon. It felt crowded to have a 1.5 break then end at 4:30, which is fairly early.

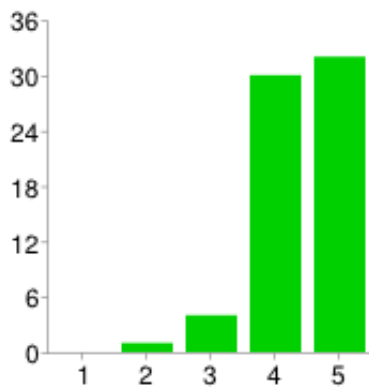
Personal assessment

I was well prepared to benefit from the lectures



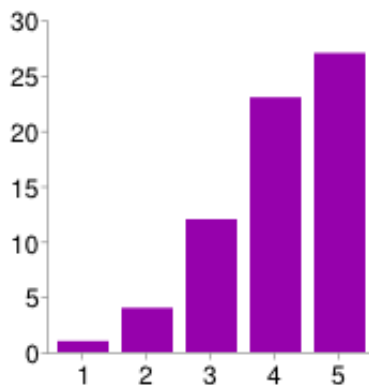
1	0	0%
2	3	4%
3	19	28%
4	28	42%
5	17	25%

My interest in the subject matter was increased by the workshop



1	0	0%
2	1	1%
3	4	6%
4	30	45%
5	32	48%

The workshop helped me meet people with similar scientific interests



1	1	1%
2	4	6%
3	12	18%
4	23	34%
5	27	40%

Additional comments on your personal assessment

The required background knowledge was more than what I was expecting from an introductory workshop, but the lectures were well enough presented that I have a clear understanding of what I need to study on to get up to speed.

The workshop helped me gain a better perspective of the overall research area. It also benefited my specific research problem through discussions with visiting experts.

I already knew most of the people at the workshop, but that isn't a criticism I shouldn't think.

I made a lot of personal and collaborative connections during the workshop. This workshop definitely helped me in expanding my research interests.

No further comments.

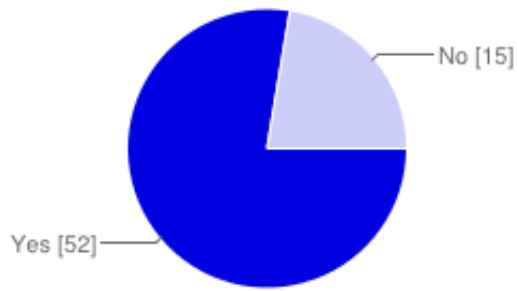
Having most lecturers give a series of 3 lectures was FANTASTIC. I got so much out of that, and it ensured each of their 1st lectures was actually introductory. I found those talks well-prepared and structured.

I liked the atmosphere at the women's workshop better, though I liked the talks at the coed workshop better. Somehow between talks there were so many people I didn't know what to do with myself, and felt nervous and uncomfortable. It felt intense and not always friendly. When I did have conversations with people they were often about trivial or boring things, no one would attempt to start a conversation about math with me. And people weren't very social in the afterhours. But I loved the talks and found the level to be a mixture of truly introductory and challenging. Pramod Achar's talks were maybe my favorites of this week. He was very clear and covered interesting material. I loved that Olivier Schiffmann gave very difficult talks and really opened up his research to the audience, giving a lot of detail, unlike Ginzburg, who crammed everything interesting he had to say into the last 5 minutes. Besides forcing him to speak, someone should have forced him to put the introductory material into one lecture and then spend the next two lectures explaining his proof of Kac's conjecture and the other conjecture he has ideas about proving. I think everyone would have liked to hear more details about those topics, and where else could we have learned them, but instead he spent 3 hours defining a quiver and its double and its framing. Maybe the organizers wanted the lectures to be very introductory, but a mix of introductory and faster-paced would have been nice. I think Frenkel hit that balance between his first and second talk. Anyways, loved the subject matter of the workshop. But hated the feeling of these people swarming looking for someone important to impress during the breaks. And almost no one to get a beer with. It makes me sad.

I new most of the people already

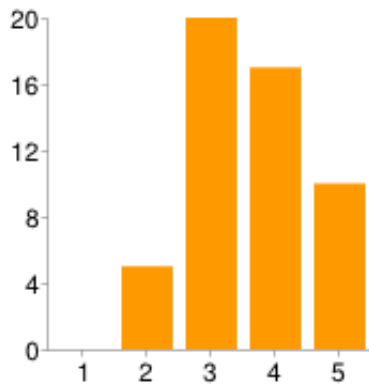
Additional Activities

Did you attend the reception?



Yes	52	78%
No	15	22%

If you did attend the reception, did it help to solidify the contacts you made in the workshop?



1	0	0%
2	5	7%
3	20	30%
4	17	25%
5	10	15%

Please provide any comments on the reception

Very good reception.

It was so crowded, that I found it hard to get food and talk to people, and just ended up leaving for the night.

It was rather crowded, but otherwise great!

it was great!

I was in a research meeting during the reception.

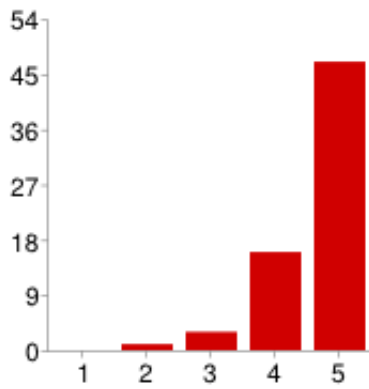
Good food.

The reception was on the first day. I was reuniting with old friends and meeting new faces, but there are only so many people you can meet on the first evening.

I think social settings where we're forced to sit at tables make it easier to meet new people

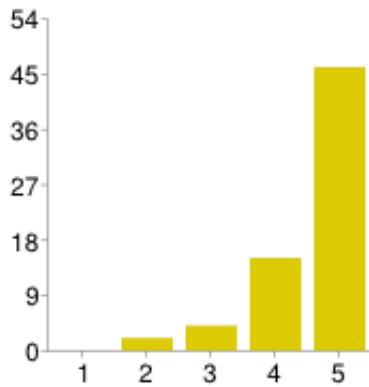
Venue

I found the MSRI staff helpful



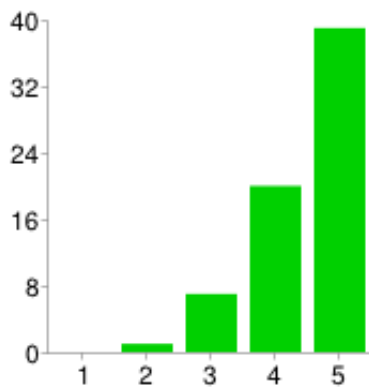
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3	3	4%
4	16	24%
5	47	70%

The MSRI physical facilities were conducive for such a workshop



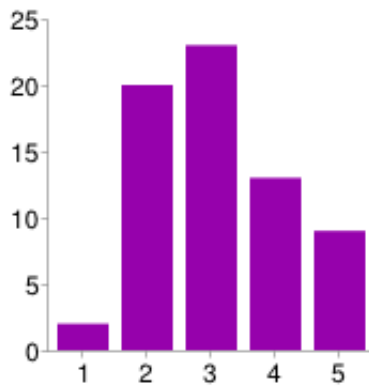
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3	4	6%
4	15	22%
5	46	69%

The MSRI computer facilities were adequate for such a workshop



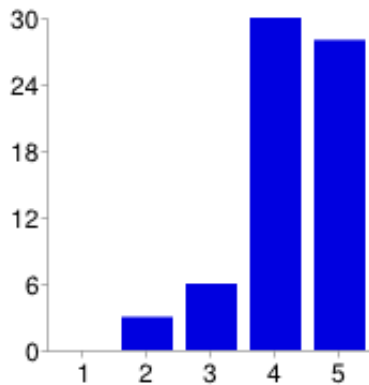
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2	1	1%
3	7	10%
4	20	30%
5	39	58%

The MSRI lunch arrangements were satisfactory



1	2	3%
2	20	30%
3	23	34%
4	13	19%
5	9	13%

The MSRI tea arrangements were satisfactory



1	0	0%
2	3	4%
3	6	9%
4	30	45%
5	28	42%

Additional comments on the venue

I wasn't a fan of the lunch at this workshop or the women's. If only there were hot lunches like at the grad workshop in summer '12! However, the afternoon snacks were amazing!! 5 stars!! The bowls of berries and peaches etc to go on angelfood cake was awesome!!

Lunch items were overpriced and there wasn't any alternative due to MSRI location.

Perhaps it would make sense to at least subsidize lunch items to make the price look reasonable, if not to provide lunch free of cost

I packed my own lunch-- quicker and cheaper.

I'm not really in a position to comment on the computing, as I am here for the semester, so have different access to that of a workshop participant I think.

The breakfast (prepacked pastries) was not that good. The orange juice was good, but I would suggest better breakfast options: bagels, fruit, better pastries, etc.

Maybe we need more restrooms.

I didn't interact much with the MSRI staff

Catering could have been improved. I am very grateful for what was provided, but I know better lunches and breakfasts would help convey the importance and professionalism of the Institute. I don't exactly know what could be done about this, but the cramped and loud area used for break between talks was not as conducive to pleasant and mathematically interesting conversation as I have experienced at other conferences. I

very much enjoyed the conference and don't mean to be overly critical; I'm just trying to be constructive.

No further comments

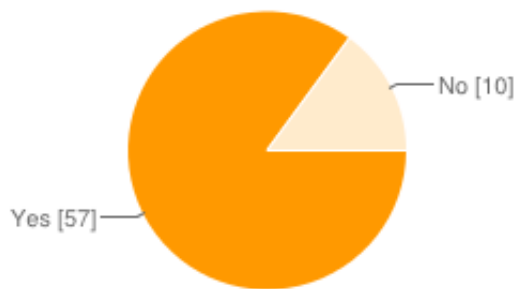
It would be nice to have some non-sweet breakfast options

More food options would have been better.

I would have preferred more healthy alternatives at tea (fresh fruit/vegetables). Some days there was fruit that seemed frozen or canned. And pastries/bagels, other starchy or unhealthy foods. N/A should be an option for some of the above questions.

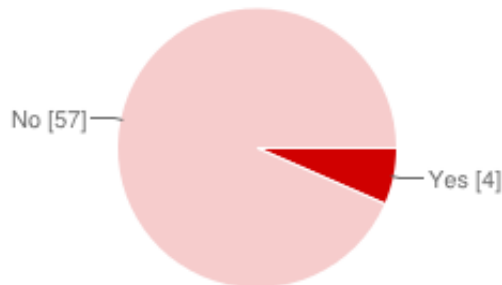
MSRI Wireless Network

Did you use MSRI's wireless network?



Yes	57	85%
No	10	15%

Did you experience any difficulties with the network?



Yes	4	6%
No	57	85%

If you did experience difficulties with the network, please explain:

Lack of connectivity (no ip address given) and slow speeds

N/A.

Bad connection, low speed

Slow connection when using Skype

Slow connection, connection drops

Thank you for completing this survey

We welcome any additional comments or suggestions you may have to improve the overall experience for future participants.

I'm calling this workshop "missed connections for men." Or maybe it was just me. But I made no new friends here, and I had no interesting conversations about math or on a personal level with anyone I didn't meet somewhere else before. That said, I did get to know one or two people better who I'd barely known before and that was nice. There do not seem to be many women in geometric representation theory -- maybe that is part of what made the atmosphere vaguely unpleasant. Often I felt really out of place and quite miserable without knowing why. I just wanted to be somewhere else. Except during the talks, I felt I was where I wanted to be. So it was not the math it was the people. If I try to incorporate geometric representation theory into my research path, it won't be to make friends.

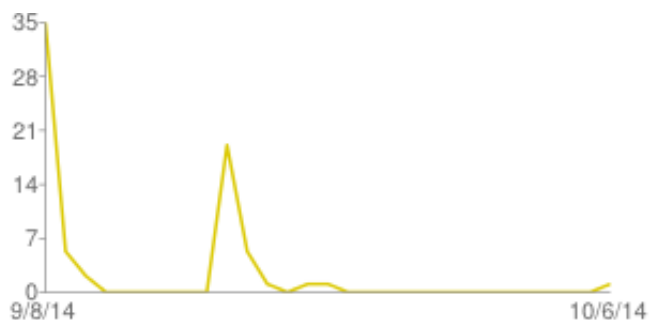
Thank you for the wonderful workshop, everyone!

It was an excellent workshop! Thanks so much to the organizers and to MSRI.

Thank you for the experience and the funding. I learned a lot!

I really appreciated the videos of the lectures were posted almost immediately.

Number of daily responses



Introductory Workshop: Geometric Representation Theory

September 2 - 5, 2014

Additional Survey Responses

Additional comments on your personal assessment

- I made a lot of personal and collaborative connections during the workshop. This workshop definitely helped me in expanding my research interests.
- I already knew most of the people at the workshop, but that isn't a criticism I shouldn't think.
- The workshop helped me gain a better perspective of the overall research area. It also benefited my specific research problem through discussions with visiting experts.
- The required background knowledge was more than what I was expecting from an introductory workshop, but the lectures were well enough presented that I have a clear understanding of what I need to study on to get up to speed.
- I new most of the people already
- I liked the atmosphere at the women's workshop better, though I liked the talks at the coed workshop better. Somehow between talks there were so many people I didn't know what to do with myself, and felt nervous and uncomfortable. It felt intense and not always friendly. When I did have conversations with people they were often about trivial or boring things, no one would attempt to start a conversation about math with me. And people weren't very social in the afterhours. But I loved the talks and found the level to be a mixture of truly introductory and challenging. Pramod Achar's talks were maybe my favorites of this week. He was very clear and covered interesting material. I loved that Olivier Schiffmann gave very difficult talks and really opened up his research to the audience, giving a lot of detail, unlike Ginzburg, who crammed everything interesting he had to say into the last 5 minutes. Besides forcing him to speak, someone should have forced him to put the introductory material into one lecture and then spend the next two lectures explaining his proof of Kac's conjecture and the other conjecture he has ideas about proving. I think everyone would have liked to hear more details about those topics, and where else could we have learned them, but instead he spent 3 hours defining a quiver and its double and its framing. Maybe the organizers wanted the lectures to be very introductory, but a mix of introductory and faster-paced would have been nice. I think Frenkel hit that balance between his first and second talk. Anyways, loved the subject matter of the workshop. But hated the feeling of these people swarming looking for someone important to impress during the breaks. And almost no one to get a beer with. It makes me sad.
- Having most lecturers give a series of 3 lectures was FANTASTIC. I got so much out of that, and it ensured each of their 1st lectures was actually introductory. I found those talks well-prepared and structured.

Additional comments on the venue

- More food options would have been better.
- I'm not really in a position to comment on the computing, as I am here for the semester, so have different access to that of a workshop participant I think.
- Lunch items were overpriced and there wasn't any alternative due to MSRI location. Perhaps it would make sense to at least subsidize lunch items to make the price look reasonable, if not to provide lunch free of cost
- I didn't interact much with the MSRI staff

- Maybe we need more restrooms.
- I packed my own lunch-- quicker and cheaper.
- The breakfast (prepacked pastries) was not that good. The orange juice was good, but I would suggest better breakfast options: bagels, fruit, better pastries, etc.
- It would be nice to have some non-sweet breakfast options
- I wasn't a fan of the lunch at this workshop or the women's. If only there were hot lunches like at the grad workshop in summer '12! However, the afternoon snacks were amazing!! 5 stars!! The bowls of berries and peaches etc to go on angelfood cake was awesome!!
- Catering could have been improved. I am very grateful for what was provided, but I know better lunches and breakfasts would help convey the importance and professionalism of the Institute. I don't exactly know what could be done about this, but the cramped and loud area used for break between talks was not as conducive to pleasant and mathematically interesting conversation as I have experienced at other conferences. I very much enjoyed the conference and don't mean to be overly critical; I'm just trying to be constructive.
- I would have preferred more healthy alternatives at tea (fresh fruit/vegetables). Some days there was fruit that seemed frozen or canned. And pastries/bagels, other starchy or unhealthy foods. N/A should be an option for some of the above questions.

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Please provide any comments on the reception

- The reception was on the first day. I was reuniting with old friends and meeting new faces, but there are only so many people you can meet on the first evening.
- I think social settings where we're forced to sit at tables make it easier to meet new people
- Very good reception.
- I was in a research meeting during the reception.
- It was rather crowded, but otherwise great!

- It was so crowded, that I found it hard to get food and talk to people, and just ended up leaving for the night.
- it was great!
- Good food.

Additional comments on the workshop organization

- Many of the talks too elementary
- Excellent in every aspects!
- I was an organizer, so perhaps shouldn't comment on that. Also, the time between talks for discussions was limited for me probably because I was an organizer!
- The talks were very uneven, some of them pitched far too high. However, the talks by Hales and Frenkel were outstanding.
- Great lineup of speakers and topics.
- Not enough space for informal discussions
- The organization was phenomenal!
- Time to talk between lectures was limited, particularly as many sessions ran overtime. This also made it harder to keep up by the end of the day (five long lectures with short breaks is both physically and mentally exhausting).
- I liked the relatively small number of lectures and the lecture series format
- overall great, though it would be nice to have tastier and more nutritious lunches (since restaurants are far away)
- I would have preferred a 2hour lunch break, and then having the talks run later into the afternoon. It felt crowded to have a 1.5 break then end at 4:30, which is fairly early.
- very good