Asocijacijske sheme

Vedran Krčadinac

2023./24.

Kratka povijest asocijacijskih shema

Kratka povijest asocijacijskih shema

- **Asocijacijske sheme** (statističari, 1950-e)

Kratka povijest asocijacijskih shema

- **Asocijacijske sheme** (statističari, 1950-e)

R. C. Bose, T. Shimamoto, *Classification and analysis of partially balanced incomplete block designs with two associate classes*, J. Amer. Statist. Assoc. **47** (1952), 151–184.

R. C. Bose, D. M. Mesner, *On linear associative algebras corresponding to association schemes of partially balanced designs*, Ann. Math. Statist. **30** (1959), 21–38.

S. S. Shrikhande, *The uniqueness of the L_2 association scheme*, Ann. Math. Statist. **30** (1959), 781–798.

Raj Chandra Bose

From Wikipedia, the free encyclopedia

Raj Chandra Bose (19 June 1901 – 31 October 1987) was an Indian American mathematician and statistician best known for his work in design theory, finite geometry and the theory of error-correcting codes in which the class of BCH codes is partly named after him. He also invented the notions of partial geometry, association scheme, and strongly regular graph and started a systematic study of difference sets to construct symmetric block designs. He was notable for his work along with S. S. Shrikhande and E. T. Parker in their disproof of the famous conjecture made by Leonhard Euler dated 1782 that there do not exist two mutually orthogonal Latin squares of order $4n + 2$ for every n.

Raj Chandra Bose

Izvor: https://en.wikipedia.org/wiki/Raj_Chandra_Bose

Kratka povijest asocijacijskih shema

Dale Marsh Mesner

April 13, 1923 ~
December 8, 2009

Resided in: **Pueblo, CO**

Dale Marsh Mesner, Professor of Mathematics. Dale first opened his eyes in a Nebraska farmhouse in 1923. Dale disliked farm work but loved numbers, read the entire dictionary and encyclopedia and won the Nebraska state spelling bee. In WWII, Dale, a Quaker, enlisted as a medic. He served in, of all places, Brazil, where he took X-rays of soldiers mustering out of the European war. Dale earned his PhD in mathematics from Michigan State University in 1956. Math was his deepest passion. He worked on the earliest computers, ones that filled an entire floor of a building. He did ground breaking research (google Bose-Mesner Algebra.) Dale taught at the University of Nebraska where he retired Professor Emeritus in 1990. He walked, talked, dreamt and researched mathematics until his final days. Dale also loved music and literature. He cared deeply for humanity and hated injustice. In 1948, he met and married Marian Woolcock, daughter of a Michigan auto worker. They served as Christian missionaries in Cuba, then raised a family stateside. He marched for Civil Rights and against the KKK in the 1960's. He opposed wars and nuclear weapons. He organized for the rights of Gays and Lesbians and in the 80's escorted women to Family Planning Clinics. All these concerns and loves he passed on to his children, Doug (Diane), Nancy (Chris Luecke), Mary (Terry Werner), Paul (David Luckens), Eric and foster son, Richard Stark. Dale has nine wonderful grandchildren. In 2008, Dale bravely survived massive cancer surgery and treatments. He and Marian moved to Pueblo in July 2009. He took good care of Marian who also has health problems. Three weeks ago he fell and broke four ribs. He closed his eyes December 8. Services will be 11 a.m. Monday, December 21, 2009, at the Unitarian Church in Lincoln, Neb. Online condolences, www.montgomerysteward.com

Izvor: https://www.montgomerysteward.com/obits/dale-marsh-mesner/

Kratka povijest asocijacijskih shema

Obituary: S.S. Shrikhande, 1917–2020

MAY 17, 2020

Shartchandra Shankar Shrikhande

Shartchandra Shankar Shrikhande, IMS Fellow and well known combinatorial mathematician, passed away on April 21 at his residence in India. He was 102.

S.S. Shrikhande was born in Sagar, India, on October 19, 1917. Having won scholarships, he was able to complete his BSc Honours at the Government College of Science (now known as the Institute of Science) in Nagpur with a first rank and a gold medal. He went on to receive his doctoral degree on Construction of Partially Balanced Designs from the University of North Carolina in 1950, under the supervision of Raj Chandra Bose. Prior to that, he was a Research Fellow at the Indian Statistical Institute. Professor Shrikhande, R.C. Bose and E. T. Parker jointly disproved Euler's 1782 conjecture that mutually orthogonal Latin squares cannot exist for orders of the form 4n+2 for any n. This was proved by Euler himself for n=0 and by Gaston Tarry in 1901 for n=1. The first analytical counterexample was found by Bose and Shrikhande in early 1959 for n=5. Later the same year, Bose, Shrikhande and Parker proved the general result that in fact such orthogonal squares exist for all orders 4n+2 except n=0,1. The trio were dubbed "Euler's Spoilers"—as reported in the front-page New York Times article on April 26, 1959.

Izvor: https://imstat.org/2020/05/17/obituary-s-s-shrikhande-1917-2020/

Kratka povijest asocijacijskih shema

Toshihiko Shimamoto

From Wikipedia, the free encyclopedia

?

Toshihiko Shimamoto	
Alma mater	Hiroshima University Texas A&M University
Scientific career	
Fields	earthquake science
Institutions	China Earthquake Administration Kyoto University
Thesis	*Effects of fault-gouge on the frictional properties of rocks : an experimental study*

Toshihiko Shimamoto is a researcher and professor of earthquake science at the Institute of Geology in Beijing (China Earthquake Administration) and affiliated researcher at Kyoto University. His experimental research has contributed significantly to our understanding of [[earthquake mechanics.

Academic career [edit]

Shimamoto earned both his undergraduate degree and Master of Science at Hiroshima University. His masters was awarded in 1971 followed by achieving his P.h.D. at Texas A&M University in 1977.[1]

Honors and awards [edit]

Shimamoto received the Louis Néel Medal in 2015 from the European Geosciences Union.[2] This medal is awarded to individuals who have contributed substantial progress in understanding rock physics, magnetism, and geomaterials, for his contributions in fault and earthquake mechanics, specifically fault weakening mechanisms at high slip rates as well as creating multiple devices in order to further research. Shimamoto invented the first machine capable of measuring friction at seismic slip rates, the first biaxial high-temperature apparatus, the first gas-medium triaxial apparatus in Japan, and the first oil-medium intra-vessel triaxial apparatus used for permeability measurements. These machines opened up new fields of study such as friction at high slip rates which helped further the exploration of the frictional and transport properties of fault rocks. Alongside this medal, he's also been awarded a fellowship in both the American Geophysical Unionn (AGU) - 2019 and the JpGU.

Izvor: `https://en.wikipedia.org/wiki/Toshihiko_Shimamoto`

Kratka povijest asocijacijskih shema

- **Koherentne kofiguracije** (istraživanja permutacijskih grupa, 1970-e)

Kratka povijest asocijacijskih shema

- **Koherentne kofiguracije** (istraživanja permutacijskih grupa, 1970-e)

D. G. Higman, *Coherent configurations. I. Ordinary representation theory*, Geometriae Dedicata **4** (1975), no. 1, 1–32.

D. G. Higman, *Coherent configurations. II. Weights*, Geometriae Dedicata **5** (1976), no. 4, 413–424.

P. J. Cameron, *Suborbits in transitive permutation groups*, Combinatorics (Proc. NATO Advanced Study Inst., Breukelen, 1974), Part 3: Combinatorial group theory, pp. 98–129, Math. Centre Tracts, No. 57, Mathematisch Centrum, Amsterdam, 1974.

Kratka povijest asocijacijskih shema

- **Koherentne kofiguracije** (istraživanja permutacijskih grupa, 1970-e)

D. G. Higman, *Coherent configurations. I. Ordinary representation theory*, Geometriae Dedicata **4** (1975), no. 1, 1–32.

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$\rightsquigarrow$ "Teorija grupa bez grupa"

Donald G. Higman

From Wikipedia, the free encyclopedia

Not to be confused with Graham Higman.

Donald G. Higman (September 20, 1928 in Vancouver – February 13, 2006) was an American mathematician known for his discovery, in collaboration with Charles C. Sims, of the Higman–Sims group.[1]

Higman did his undergraduate studies at the University of British Columbia,[1] and received his Ph.D. in 1952 from the University of Illinois Urbana-Champaign under Reinhold Baer.[2] He served on the faculty of mathematics at the University of Michigan from 1956 to 1998.[1]

His work on homological aspects of group representation theory established the concept of a relatively projective module and explained its role in the theory of module decompositions. He developed a characterization of rank-2 permutation groups, and a theory of rank-3 permutation groups; several of the later-discovered sporadic simple groups were of this type, including the Higman–Sims group which he and Sims constructed in 1967.[1]

Izvor: `https://en.wikipedia.org/wiki/Donald_G._Higman`

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Izvor: `https://en.wikipedia.org/wiki/Donald_G._Higman`

E. Bannai, R. L. Griess Jr., C. E. Praeger, L. Scott, *The mathematics of Donald Gordon Higman*, Michigan Math. J. **58** (2009), no. 1, 3–30.

Graham Higman

From Wikipedia, the free encyclopedia

Not to be confused with Donald G. Higman.

Graham Higman FRS[1] (19 January 1917 – 8 April 2008) was a prominent English mathematician known for his contributions to group theory.

Biography [edit]

Higman was born in Louth, Lincolnshire, and attended Sutton High School, Plymouth, winning a scholarship to Balliol College, Oxford.[2] In 1939 he co-founded The Invariant Society, the student mathematics society,[3] and earned his DPhil from the University of Oxford in 1941. His thesis, *The units of group-rings*, was written under the direction of J. H. C. Whitehead. From 1960 to 1984 he was the Waynflete Professor of Pure Mathematics at Magdalen College, Oxford.

Higman was awarded the Senior Berwick Prize in 1962 and the De Morgan Medal of the London Mathematical Society in 1974. He was the founder of the Journal of Algebra and its editor from 1964 to 1984. Higman had 51 D.Phil. students, including Jonathan Lazare Alperin, Rosemary A. Bailey, Marston Conder, John Mackintosh Howie, and Peter M. Neumann.

He was also a local preacher in the Oxford Circuit of the Methodist Church. During the Second World War he was a conscientious objector, working at the Meteorological Office in Northern Ireland and Gibraltar.

He died in Oxford.[2]

Graham Higman

Born	Graham Higman 19 January 1917 Louth, Lincolnshire, England
Died	8 April 2008 (aged 91)

Izvor: https://en.wikipedia.org/wiki/Graham_Higman

Kratka povijest asocijacijskih shema

- **Celularni prsteni** (sovjetski matematičari, 1970-e)

Kratka povijest asocijacijskih shema

- **Celularni prsteni** (sovjetski matematičari, 1970-e)

B. Weisfeiler, A. A. Leman, *Reduction of a graph to a canonical form and an algebra which appears in this process*, Scientific-Technological Investigations **2** (1968), 12–16.

I. A. Faradžev, M. H. Klin, M. E. Muzichuk, *Cellular rings and groups of automorphisms of graphs*, Investigations in algebraic theory of combinatorial objects, 1–152, Math. Appl. (Soviet Ser.), 84, Kluwer Acad. Publ., 1994.

Boris Weisfeiler

From Wikipedia, the free encyclopedia

Boris Weisfeiler (born 19 April 1941 – disappeared 4–5 January 1985)[1] was a Soviet-born mathematician and professor at Penn State University who lived in the United States before disappearing in Chile in 1985. Declassified US documents suggest a Chilean army patrol seized Weisfeiler and took him to Colonia Dignidad, a secretive Germanic agricultural commune set up in Chile in the 1960s.[2] During the Chilean Pinochet military dictatorship Boris Weisfeiler allegedly drowned. He is known for the Weisfeiler filtration, Weisfeiler–Leman algorithm and Kac–Weisfeiler conjectures.

Early life and career [edit]

Weisfeiler, a Jew, was born in the Soviet Union. He received his Ph.D. in 1970 from the Steklov Institute of Mathematics Leningrad Department, as a student of Ernest Vinberg.[3] In the early 1970s, Weisfeiler was asked to sign a letter against a colleague, and for his refusal was branded "anti-Soviet". Weisfeiler left the Soviet Union in 1975 to be free to advance his career and practice his religion. After a brief period under Armand Borel at the Institute for Advanced Study, near Princeton University, Weisfeiler became a professor at Pennsylvania State University. In 1981, he was naturalized as an American citizen.

1981, he was naturalized as an American citizen.

Boris Yulievich Weisfeiler	
Born	April 19, 1941 Moscow, Russian SFSR, Soviet Union
Disappeared	January 1985 San Fabián de Alico, Chile
Status	Missing for 38 years, 9 months and 30 days
Nationality	American
Alma mater	Steklov Institute of Mathematics (Ph.D.)
Known for	Weisfeiler–Leman algorithm Weisfeiler filtration Kac–Weisfeiler conjectures
Scientific career	
Fields	Mathematics
Institutions	Pennsylvania State University

Institutions Pennsylvania State University

Izvor: https://en.wikipedia.org/wiki/Boris_Weisfeiler

Kratka povijest asocijacijskih shema

MISSING IN CHILE

MATHEMATICS PROFESSOR BORIS WEISFEILER HAS BEEN MISSING IN CHILE SINCE JANUARY 4, 1985

DID YOU SEE THIS MAN?

¿Ha visto a este hombre?
Did you see this man?

With information please contact: Brigada Investigadora de Asuntos Especiales y de Derechos Humanos (56-2) 5657475 or the FBI Attaché at the U.S. Embassy in Santiago, Chile at (56-2) 330-3396

ABOUT BORIS

Boris Weisfeiler: la obra imperecedera del matemático desaparecido en Chile en 1985
El Mostrador, March 30, 2016

SEARCHING FOR BORIS WEISFEILER: SEQUENCE OF EVENTS

2023.THE SUPREME COURT TO HEAR THE ARGUMENTS

On May 4, 2023, more than 3 years after our appeal was filed, the Second Chamber of the Supreme Court heard Boris's case. Hernan Fernandez, the Weisfeiler family's attorney, Joaquin Perera from the Human Rights Program, and Ricardo Gonzales from the State Defense Council made their cases before the Second Chamber. Joaquín Perera presented his arguments first, followed by Hernán Fernandez, and Ricardo González closed.

On the second day of the hearing on May 5, two defense attorneys representing military members involved in Boris's kidnapping and disappearance presented their arguments. No defense attorney represented the four Carabineros involved in the case.

It could take months before the Court's decision will be announced.

LATEST DEVELOPMENTS

The Supreme Court to hear the arguments
YouTube, May 4-5, 2023, Santiago, Chile (in Spanish)

U.S. Ambassador to Chile Bernadette Meehan's **Zoom meeting** with Olga Weisfeiler
Chile-US, March 10, 2023

The book **Boris, 1985** by Douna Loop
France, January 2023
Available for purchase **here** (in French)
The book sample **translated into English**

Commemorating 80th birthday of Boris Weisfeiler / Commemoración 80 años Boris Weisfeiler
YouTube, April 19, 2021, Santiago, Chile
(in English and Spanish)
Speakers: Attorney Hernan Fernandez, Olga Weisfeiler, Math Prof. Andres Navas, Martin Grohe, Igor Dolgachev

A short video/Testimonial/ Olga Weisfeiler
Vimeo.com /by Marella Oppenheim, October 13, 2019

Excavations at Chile torture site offer new hope for relatives of disappeared
The Guardian, US, May 2, 2018

Missing in Chile: What happened to Boris Weisfeiler?
BBC, April 10, 2016

Chile Halts Inquiry on American Who Disappeared 31 Years Ago
The New York Times, March 10, 2016

Izvor: http://boris.weisfeiler.com/

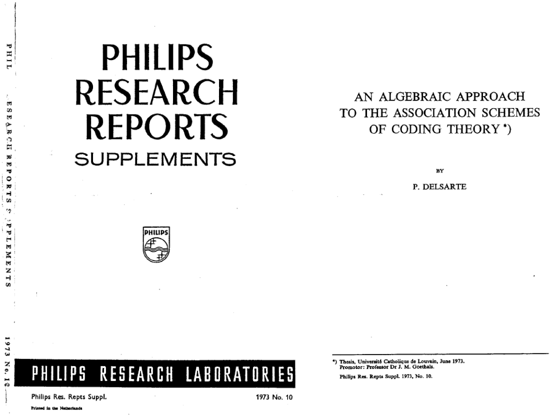
Kratka povijest asocijacijskih shema

- **Disertacija Philippe Delsartea** (1973.)

P. Delsarte, *An algebraic approach to the association schemes of coding theory*, Philips Res. Rep. Suppl. 1973, no. 10, vi+97 pp.

- **Disertacija Philippe Delsartea** (1973.)

P. Delsarte, *An algebraic approach to the association schemes of coding theory*, Philips Res. Rep. Suppl. 1973, no. 10, vi+97 pp.


PHILIPS RESEARCH REPORTS SUPPLEMENTS

PHILIPS

PHILIPS RESEARCH LABORATORIES

Philips Res. Repts Suppl. 1973 No. 10

Printed in the Netherlands

AN ALGEBRAIC APPROACH TO THE ASSOCIATION SCHEMES OF CODING THEORY *)

BY

P. DELSARTE

*) Thesis, Université Catholique de Louvain, June 1973.
Promotor: Professor Dr J. M. Goethals.
Philips Res. Repts Suppl. 1973, No. 10.

Kratka povijest asocijacijskih shema

- **Knjige**

E. Bannai, T. Ito, *Algebraic combinatorics. I. Association schemes*, The Benjamin/Cummings Publishing Co., 1984.

A. E. Brouwer, A. M. Cohen, A. Neumaier, *Distance-regular graphs*, Springer-Verlag, 1989.

C. D. Godsil, *Algebraic combinatorics*, Chapman & Hall, 1993.

R. A. Bailey, *Association schemes. Designed experiments, algebra and combinatorics*, Cambridge University Press, 2004.

E. Bannai, E. Bannai, T. Ito, R. Tanaka, *Algebraic combinatorics*, De Gruyter, 2021.

Što je asocijacijska shema?

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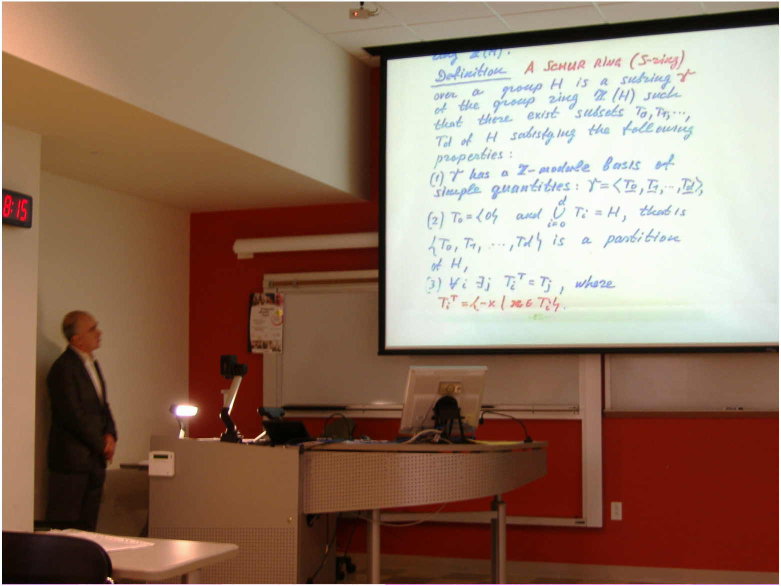


Što je asocijacijska shema?

Algebraic Coding Theory-Honoring the Retirement of Vera Pless

At 2006 Fall Central Section Meeting, Cincinnati, OH, October 21-22, 2006

Group Photos (a), (b)

Group Photo 1

Tsvetan I. Asamov 1, Tsvetan I. Asamov 2,
Alexander Barg 1, Alexander Barg 2,
Steven T. Dougherty 1, Steven T. Dougherty 2,
Iwan M. Duursma 1, Iwan M. Duursma 2,
Philippe Gaborit,
T. Aaron Gulliver 1, T. Aaron Gulliver 2, T. Aaron Gulliver 3,
Xiang-dong Hou,
W. Cary Huffman 1, W. Cary Huffman 2, W. Cary Huffman 3,
Jennifer D. Key,
Jon-Lark Kim 1 , Jon-Lark Kim 2,
Mikhail Klin 1, Mikhail Klin 2, Mikhail Klin 3,
Gretchen Matthews 1, Gertchen Matthews 2, Gretchen Matthews 3, Gretchen Matthews 4,

ALGEBRAIC COMBINATORICS AND APPLICATIONS

Designs and Codes

April 3-10, 2005

Scientific Program

Current list of keynote speakers:

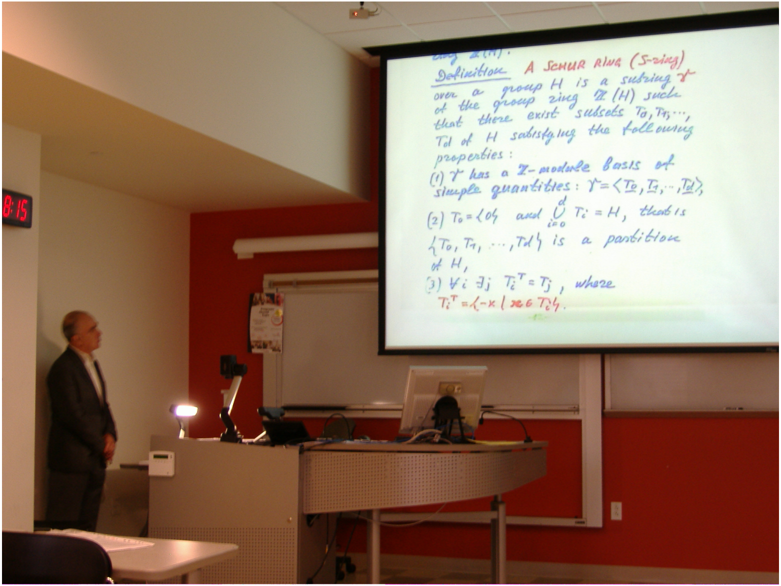
E. O'Brien:	Effective algorithmic approaches to the construction and classification of finite groups (abstract)
A. E. Brouwer:	TBA
G. Butler:	Combinatorial problems from genomics (abstract)
C. Colbourn:	Cover-free Families and Topology-Transparent Communication (abstract)
J. Dinitz:	Perfect and Uniform One-factorizations of the complete graph(abstract)
J. Doyen:	Constructing combinatorial structures with prescribed numbers of orbits (abstract)
H-D. Gronau:	Super-simple designs(abstract)
G.B. Khosrovshahi:	On the recursive constructions of large sets of t-designs (abstract)
E. Konstantinova:	Reconstruction of permutations from their erroneous pattern (abstract)
V. Levenshtein:	Graph reconstruction from metric balls of all its vertices (abstract)
S. Magliveras:	Group theoretic methods in the construction of large sets of t-designs (abstract)
R. Mathon:	Translation planes of order 32 with non-trivial translation complement (abstract)
P. Östergard:	Classification of Combinatorial Designs (abstract)
V. Pless:	Binary Self-Dual Codes and Formally Self-Dual Codes (abstract)
C. Praeger:	On point-imprimitive, block-transitive designs (abstract)
T. v. Tran:	On Covering Arrays (abstract)
W. Willems:	Error probabilities in data transmissions (abstract)

Što je asocijacijska shema?

Contributed Talks:
Each conference delegate is invited to present a contributed Talk. The time-limit for these talks will be 25 minutes.

R. F. Bailey:	Permutation groups, Error-correcting Codes and Uncoverings (abstract)
Y. Ben-Haim:	Exact Minimum Density of Codes Identifying Vertices in the Square Grid (abstract)
A. Betten:	Geometric Codes and Hyperovals (abstract)
M. Bogaerts:	Permutation Arrays and Isometries of Sym(n) (abstract)
N. Bougard:	Lotto designs and Lotto numbers (abstract)
M. Braun:	Designs over finite fields (abstract)
J. De Beule:	The Hermitian variety H(5,4) has no ovoid (abstract)
M. Buratti:	Graph decompositions with a prescribed automorphism group (abstract)
P. Cara:	Independent sets in finite projective groups (abstract)
A. Klein:	Covers and partial spreads of polar spaces (abstract)
M. Klin:	Siamese association schemes and Siamese Steiner designs (45min) (abstract)
A. Kohnert:	Construction of optimal Codes (abstract)
I. Kovacs:	On Cayley digraphs of semidirect products of abelian groups (abstract)
V. Krcadinac:	Finite linear spaces consisting of two symmetric configurations (abstract)
C.Y. Ku:	Intersecting families of set partitions (abstract)
P. Lisonek:	Enumeration of codes of fixed cardinality up to isomorphism (abstract)
S. Molodtsov:	Computer construction of minimal graphs of diameter 2 (abstract)
M. Muzychuk:	New series of strongly regular graphs (abstract)
D. Nikolova:	Characterisation of Finite Soluble Groups by Two-Variable Commutator Identities (abstract)

Što je asocijacijska shema?



Što je asocijacijska shema?

Coherent configurations

A. E. Brouwer

Abstract

Definition and a few examples.

0.1 Relations

A *coherent configuration* is a finite set X (of *points*) together with a collection $\mathcal{R} = \{R_i \mid i \in I\}$ of nonempty binary relations on X, satisfying the following four conditions:

(i) $\mathcal{R}$ is a partition of $X \times X$, that is, any ordered pair of points is in a unique relation R_i.

(ii) There is a subset H of the index set I such that $\{R_h \mid h \in H\}$ is a partition of the diagonal $\{(x,x) \mid x \in X\}$.

(iii) For each R_i, its converse $\{(y,x) \mid (x,y) \in R_i\}$ is also one of the relations in $\mathcal{R}$, say, $R_{i'}$.

(iv) For $i, j, k \in I$ and $(x,y) \in R_k$, the number of $z \in X$ such that $(x,z) \in R_i$ and $(z,y) \in R_j$ is a constant p_{ij}^k that does not depend on the choice of x, y.

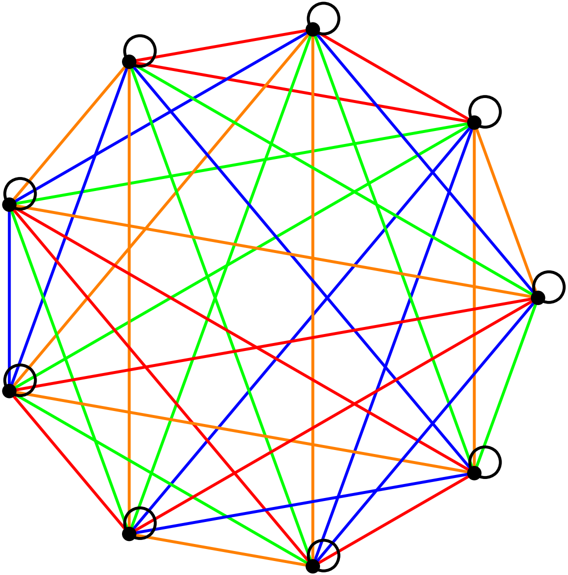
Coherent configurations were introduced by Higman in order to 'do group theory without groups', see example (ii) below.

The number $|I|$ of relations is called the *rank* of the coherent configuration.

From (ii) we get a partition of X into sets X_h ($h \in H$) called *fibers*, defined by $R_h = \{(x,x) \mid x \in X_h\}$ for $h \in H$. It follows from (iv) that for any $i \in I$ we have $R_i \subseteq X_s \times X_t$ for certain fibers X_s, X_t. Consequently, any subset H_0 of H determines a sub-cc with point set $\bigcup_{h \in H_0} X_h$.

Što je asocijacijska shema?

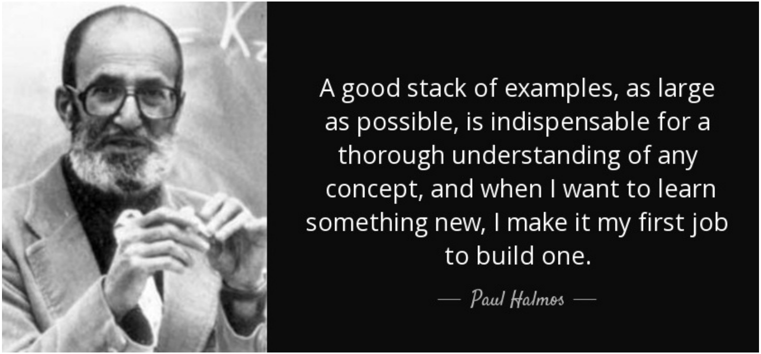
Što je asocijacijska shema?



Što je asocijacijska shema?

$$\begin{bmatrix} 0 & 1 & 1 & 2 & 2 & 3 & 3 & 4 & 4 \\ 1 & 0 & 1 & 3 & 4 & 2 & 4 & 2 & 3 \\ 1 & 1 & 0 & 4 & 3 & 4 & 2 & 3 & 2 \\ 2 & 3 & 4 & 0 & 3 & 2 & 1 & 1 & 4 \\ 2 & 4 & 3 & 3 & 0 & 1 & 2 & 4 & 1 \\ 3 & 2 & 4 & 2 & 1 & 0 & 4 & 3 & 1 \\ 3 & 4 & 2 & 1 & 2 & 4 & 0 & 1 & 3 \\ 4 & 2 & 3 & 1 & 4 & 3 & 1 & 0 & 2 \\ 4 & 3 & 2 & 4 & 1 & 1 & 3 & 2 & 0 \end{bmatrix}$$

Što je asocijacijska shema?



Chris Godsil

Chris Godsil

Introduction

I am a retired professor in Combinatorics and Optimization in the Math Faculty at the University of Waterloo. The main purpose of these pages is to provide information about research in which I am involved, with my students and postdocs.

Algebraic Graph Theory. Our group's webpage. We run a weekly seminar in algebraic graph theory, more about this here.

Other talks

1. Notes and slides for a talk "Quantum Colouring and Derangements".
2. slides for talk "Problems on Continuous Quantum Walks".

My Research

Quantum Walks

[to be updated]

Covers

- Contact

- Projects - in algebraic graph theory.
- Exercises in linear algebra.

- Notes - some published, some not
- Advice - mainly on writing and speaking
- Talks
- My students (and links to some theses)
- Useful data, software

- Preface to Algebraic Combinatorics
- Algebraic Graph Theory - co-authored with Gordon Royle
- The Erdos-Ko-Rado Theorem: Algebraic Approaches - co-authored with Karen Meagher, nothing here.
- Discrete Quantum Walks on Graphs and Digraphs - coauthored with Hanmeng Zhan

- About Me

`https://www.math.uwaterloo.ca/~cgodsil/`

Chris Godsil

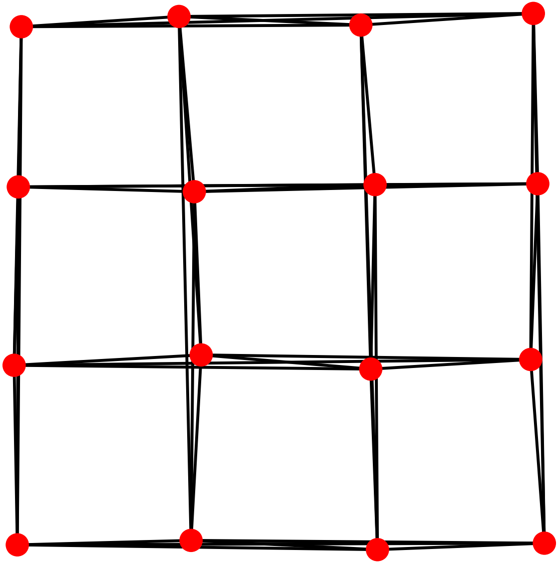
6. **Do not invent notation.**

7. Do not invent notation.

8. Well, you are only human, and you have this absolutely wonderful notational improvement, which must be released at once on an unsuspecting world. You should at least check that there is not a term already in use. If there is then you should use it instead. No one has ever gained even temporary fame in mathematics by introducing a new system of notation. You should also try to avoid the trap of believing that the notation used in your graduate school is the universal standard.

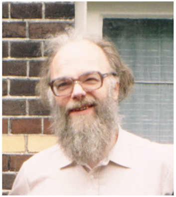
9. Cuteness is only tolerable in small children. This applies particularly to your choice of notation.

Topovski graf



Andries Brouwer

Andries E. Brouwer



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people at win.tue.nl / owinfo / library / eiψ / eidma / diamant

Math

List of (mathematical) publications and available preprints.

Algebraic graph theory

A feeble attempt to make the files with Additions and Corrections to `Distance-Regular Graphs' by Brouwer, Cohen and Neumaier (Springer, 1989) available. The source is some troff dialect, with most formatting commands removed. One further correction (PDF). Yet another.

Info on email server (that stopped working mid 2004) with information on distance-regular graphs.

Machine-readable intersection arrays for distance-regular graphs.

Spectra of graphs, extended course notes.

A table of parameters of strongly regular graphs.

A table of parameters of directed strongly regular graphs.

https://www.win.tue.nl/~aeb/

Parameters of Strongly Regular Graphs

Below tables with parameters for strongly regular graphs.

The columns are:

- existence
- v - number of vertices
- k - valency
- λ - number of common neighbours of two adjacent vertices
- μ - number of common neighbours of two nonadjacent vertices
- r^f - positive eigenvalue with multiplicity
- s^g - negative eigenvalue with multiplicity
- comments

The comments are undocumented at present. Ask.

1-50 vertices
51-100 vertices
101-150 vertices
151-200 vertices
201-250 vertices

https://www.win.tue.nl/~aeb/graphs/srg/srgtab.html

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	v	k	λ	μ	r^f	s^g	comments
!	5	2	0	1	0.618^2	-1.618^2	pentagon; Paley(5); Seidel 2-graph*
!	9	4	1	2	1^4	-2^4	Paley(9); 3^2; 2-graph*
!	10	3	0	1	1^5	-2^4	Petersen graph; $NO^-(4,2)$; $NO^{-,orth}(3,5)$; switch OA(3,2)+*; 2-graph
		6	3	4	1^4	-2^5	Triangular graph T(5); 2-graph
!	13	6	2	3	1.303^6	-2.303^6	Paley(13); 2-graph*
!	15	6	1	3	1^9	-3^5	O(5,2) Sp(4,2); $NO^-(4,3)$; GQ(2,2); 2-graph*
		8	4	4	2^5	-2^9	Triangular graph T(6); 2-graph*
!	16	5	0	2	1^{10}	-3^5	q222=0; $VO^-(4,2)$ affine polar graph; projective binary [5,4] code with weights 2, 4; $RSHCD^-$; 2-graph
		10	6	6	2^5	-2^{10}	Clebsch graph; q111=0; from 2-(4,2,1) with 1-factor Fickus et al.; 2-graph
2!	16	6	2	2	2^6	-2^9	Shrikhande graph; 4^2; Wallis (AR(2,1)+S(2,2,4)); from a partial spread: projective binary [6,4] code with weights 2, 4; $RSHCD^+$; 2-graph
		9	4	6	1^9	-3^6	OA(4,3); $Bilin_{2x2}(2)$; Wallis2 (AR(2,1)+S(2,2,4)); Goethals-Seidel(2,3); $VO^+(4,2)$ affine polar graph; 2-graph
!	17	8	3	4	1.562^8	-2.562^8	Paley(17); 2-graph*
!	21	10	3	6	1^{14}	-4^6	
		10	5	4	3^6	-2^{14}	Triangular graph T(7)
-	21	10	4	5	1.791^{10}	-2.791^{10}	Conf
!	25	8	3	2	3^8	-2^{16}	5^2
		16	9	12	1^{16}	-4^8	OA(5,4)
15!	25	12	5	6	2^{12}	-3^{12}	Paulus and Rozenfel'd; Paley(25); OA(5,3); 2-graph*
10!	26	10	3	4	2^{13}	-3^{12}	Paulus and Rozenfel'd; switch OA(5,3)+*; 2-graph

https://www.win.tue.nl/~aeb/graphs/srg/srgtab.html

Peter Cameron

Peter Cameron's homepage

Welcome to my new homepage on GitHub. This page is under construction (and probably always will be!)

I am a quarter-time Professor in the School of Mathematics and Statistics at the University of St Andrews, and an Emeritus Professor of Mathematics at Queen Mary, University of London. In addition, I am an associate researcher at CEMAT, University of Lisbon, Portugal.

I am a Fellow of the Royal Society of Edinburgh.

About me

- My official page
- My diary
- zbMATH profile, MathSciNet profile, Google Scholar
- ORCID record: orcid.org/0000-0003-3130-9505
- Mathematical genealogy, Wikipedia page
- CV and publications (PDF)
- Biographical stuff, travel diaries

On this site

- Talks, publications, conjectures, coauthors, students
- Books: Introduction to Algebra, Combinatorics, Notes on Counting, Permutation Groups, Sets, Logic and Categories (some dead links to be sorted out)
- Problems from my QMUL homepage

Elsewhere

- My homepage at QMUL
- Papers on arXiv
- Algebra and Combinatorics at St Andrews
- British Combinatorial Committee, BCC Conference List
- St Andrews pure mathematics seminars
- CIRCA
- ORCiD
- Lecture notes
- Australasian Journal of Combinatorics
- Cameron Counts
- Mathematical quotes
- The Infinite Quest, a short course from the IAI Academy
- Mathematics: the next generation (LMS–Gresham lecture)

https://cameroncounts.github.io/web/

Peter Cameron's Blog

always busy counting, doubting every figured guess . . .

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Ordering groups by element orders

Posted on 30/10/2023 by Peter Cameron

Recently a couple of people have asked me questions, or suggested research topics, related to what appear to be elementary properties of finite groups, but on examination, show unexpected complexities. Part of the reason why group theory is such an endlessly fascinating topic. This one comes from Hiranya Kishore Dey in Bangalore, India. I hope to discuss the other one soon.

The paper we wrote is on the arXiv, 2310.06516. So you can read it if you want. There is an elephant in the room, which I will talk about later. (I hope this is an acceptable metaphor for a paper with an Indian co-author.)

Let G be a finite group of order n. Its order sequence, $\mathrm{os}(G)$, is the n-tuple of orders of the elements of G, arranged in non-decreasing order (so starting with 1 for the identity). The order sequences are partially ordered, where one sequence dominates another if every

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- Ordering groups by element orders
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- Contents
- Fear of mathematics

Recent comments

- Peter Cameron on Challenges in combinatorial design theory

https://cameroncounts.wordpress.com/

Peter Cameron

Strongly regular graphs stand on the cusp between the random and the highly structured. For example, there is (up to isomorphism) a unique srg$(36, 10, 4, 2)$; but a computation by McKay and Spence [20] showed that the number of srg$(36, 15, 6, 6)$s is 32548. The pattern continues: there is a unique srg$(m^2, 2(m-1), m-2, 2)$, but more than exponentially many srg$(m^2, 3(m-1), m, 6)$s, as we will see.

This suggests that no general asymptotic results are possible, and that, depending on the parameters, strongly regular graphs can behave in either a highly structured or an apparently random manner.

Peter Cameron

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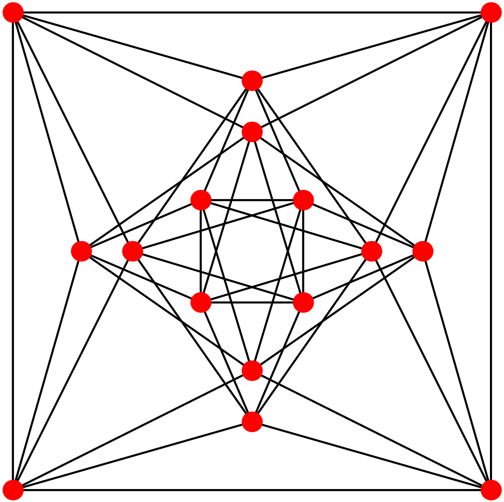
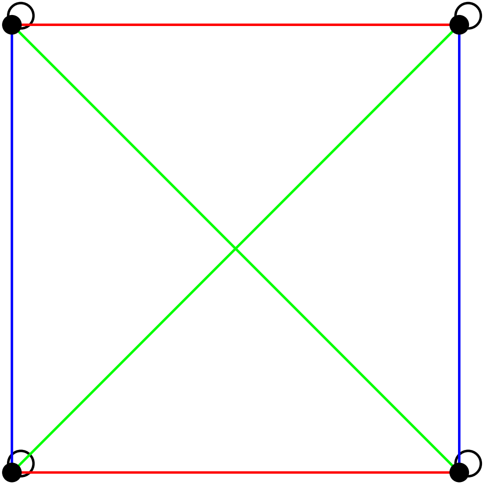
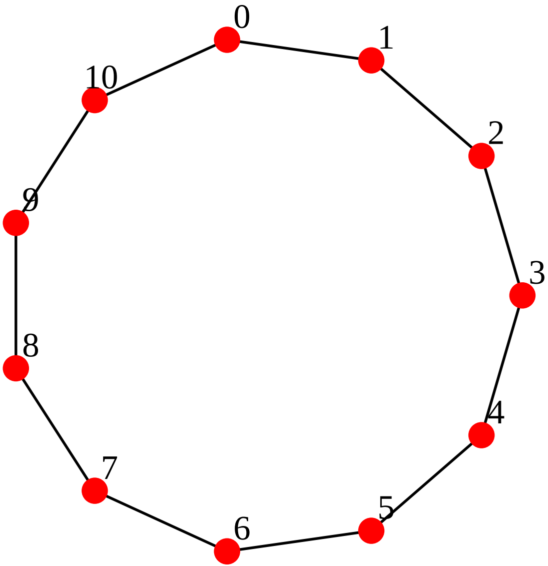
Shrikhandeov graf



Asocijacijska shema koja nije metrička



Poligon reda $n = 11$



Hiperkocka dimenzije $d = 4$ / Hammingova shema $H(4, 2)$