SURVEYS IN COMBINATORICS, 1999 pdf

1: survey articles

Surveys in combinatorics, [J D Lamb; D A Preece;] -- The British Combinatorial Conference is one of the most well known meetings for combinatorialists. This volume collects the invited talks from the conference held at the University of Kent and.

This working group will concentrate on two general topics, extremal graph theory and extremal problems arising from combinatorial search and testing. Extremal graph theory [9, 34] deals with graphs satisfying specified constraints and optimizing some criterion. We plan to investigate jointly a number of specific questions of current research interest in this field, which has played a fundamental role in the history of graph theory. The generalized matching problem is to find many vertex-disjoint copies of a fixed graph in a large graph. The working group will collaborate on identifying the precise extremal graphs in connection with this notion. Here, a family L of sample graphs is fixed and we consider various conditions on a graph on n vertices that does not contain any graph in L as a subgraph not necessarily induced. The most famous such problem asks for the maximum number of edges ext n,L of a graph G on n vertices that does not have any subgraph in L. His goal was not so much to determine the extremal number of edges as to discover some important new phenomena by solving the problem for different cases. Surprisingly enough, some very simple cases of this problem remain open, e. We shall try to make use of similar ideas. Let us say that a graph has property Bp,t if one cannot delete t-1 vertices from it to get a p-colorable graph. This type of question has been of interest since the work in [33]. The Peterson graph is a special case of the Kneser graph, which is defined as follows. The Peterson graph is Z 5,2. In such a coloring, each vertex x is assigned a set C x of n colors in such a way that if x and y are adjacent, then C x and C y are disjoint. These colorings can be viewed as homomorphisms into Kneser graphs. We shall investigate an old conjecture of Stahl [36] giving the smallest number of colors in an n-tuple coloring of the Kneser graph see also [22]. This problem relates to the work of the Working Group on Graph Coloring and Generalizations which will investigate generalizations of n-tuple colorings called set colorings. The Kneser graph is defined by subsets of a finite set. Many problems of extremal graph theory are interesting in the more general setting of extremal set theory or extremal hypergraph theory. See for example [16, 17, 15, 24]. As time permits, the group will extend its work to these more general contexts. An interesting problem is to find the minimum degree in a graph of n vertices that guarantees that the graph will have the Peterson graph as a subgraph. As observed in [35], the upper bound is almost achieved in many interesting cases, and we shall try to identify conditions under which this is true. For surveys about these tools, see [27, 30]. This working group will also be concerned with several classes of combinatorial search and testing problems. For example, we may be performing diagnostic tests to identify a faulty component within a system of components. If the system is monitored continuously for failure, it is reasonable to assume that there is a single faulty component present at the instant of system failure. Katona [25, 26] has investigated the specific variant of this problem in which there are constraints on the maximum number of items which can be included in any test, a situation corresponding to the case that the diagnostic device has some physical capacity associated with it. He has also investigated various models in which test results can be unreliable, obtaining for both reliable and unreliable frameworks bounds on the maximum number of tests required given that the goal is to minimize this quantity. We shall investigate a number of variants of the search problem, such as the case in which there are multiple diagnostic devices operating in parallel, and when we focus on the performance criterion of minimum average number of tests under a probability model imposed on the individual items for being the single distinguished one. Work of Abrahams [1] is relevant here. We plan to work on performance bounds for minimum-average-number-of-tests problems in which there are constraints on the individual test sizes. We will also work on a number of other problem variants, both for reliable and unreliable test models, particularly variants involving linearly and partially ordered constraints on the items. The working group will also investigate the related theory and algorithms of combinatorial group testing see [14] , with emphasis on connections to coding theory and combinatorial design. To identify all positive cases in a large population of items, group testing proceeds by grouping the items into subsets, testing if a subset contains at least one positive item, and then identifying all positive items through iteration of group tests. The theory of group testing arose via testing millions of World War II military draftees for syphilis [13] and it is very relevant to schemes for large-scale blood testing for viruses such as HIV. Group testing also arises in connection with the mapping of genomes see, e. Here, we have a long list of molecular sequences, form a library of subsequences clones , and test whether or not a particular sequence a probe appears in the library by testing to see which clones it appears in. Because clone libraries can be huge, we do this by pooling the clones into groups. Group testing is also relevant to the identification of defective products and has found application in satellite communications see [12]. We will investigate these various applications of group testing. Among the specific questions we will explore are questions dealing with two-stage group testing. Here, the goal of the first stage is to identify a small subset of the items being tested that is sure to contain all the positive items. Some preliminary work in this area is contained in the papers [8, 11, 21] and we shall investigate it further, with emphasis on the problem of finding designs that achieve some of the bounds obtained in [21]. We shall also investigate problems involving testing properties of evolving objects. These problems can be formulated as determining whether a function f has property P or is -far from any function with property P. A property testing algorithm is given a sample of the value of f on instances drawn according to some distribution, and, in some cases, it is also allowed to query f on instances of its choice. The concept is defined by Goldreich, Goldwasser and Ron [23]. The function f, viewed as an object itself, can be of combinatorial, geometric or algebraic nature. Applications of property testing range from the theory of learning to the theory of probabilistically checkable proofs. Practical applications include testing the hyper-link graph of the Internet and testing of clusterings related to data mining [2]. Thus far all property tests are designed to work with static objects even though in reality the studied object e. In this new line of research we will investigate efficient methods for testing changing objects and will seek to determine the frequency with which we have to draw samples if we want to keep the computed information up to date. For additional relevant work, see [3, 4, 20]. Theory, A74, , Theory, A93, ,

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2: Surveys in Combinatorics, : J D Lamb :

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A Dirac Graphs in which every finite path is contained in a circuit, Math. Combinatorial Theory B 17 Dirac On the existence of certain subgraphs in infinite graphs, Nederl. Combinatorial Theory B 20 Harary Anticritical graphs, Math. Reid Edge sets contained in circuits, Israel J. Combinatorial Theory B 22 Combinatorial Theory B 24 Graph Theory 2 29 Hamiltonian paths in squares of infinite locally finite blocks, Annals of Discrete Math. Sheehan Three-regular subgraphs of four-regular graphs, J. Graph Theory 3 Schmeichel On the number of Hamiltonian cycles in a maximal planar graph, J. Andersen The cover-index of infinite graphs, Aequationes Math. Combinational Theory B 28 Wakabayashi Hypotraceable digraphs, J. Graph Theory 4 Combinatorial Theory B 29 Combinatorics 1 Combinatorial Theory B 30 Toft Non-separating induced cycles in graphs, J. Combinatorial Theory B 31 The Theory and Applications of Graphs eds. John Wiley and Sons pp. Graph Theory 5 Bermond Cycles in digraphs - a survey, J. Plummer A nine point theorem for 3-connected cubic graphs, Combinatorica 2 Combinatorial Theory B 33 Sotteau Orientations of Hamiltonian cycles in digraphs, Ars Combinatoria 14 Academic Press, London , pp, Graph Theory 7 Combinatorial Theory B 35 Graph Theory 8 Progress in Graph Theory J. Academic Press, Toronto , pp. Combinatorial Theory B 37 Combinatorics 6 Holton Cycles through four edges in 3-connected cubic graphs, Graphs and Combinatorics 1 Graph Theory 9 Combinatorial Theory B 40 Graph Theory 10 Hahn Path and cycle sub-Ramsey numbers and an edge colouring conjecture, Discrete Math. Seymour Characterization of even digraphs, J. Combinatorial Theory B42 Combinatorial Theory B 43 Seymour Subgraphs of large connectivity and chromatic number in graphs of large chromatic number, J. Fraisse Hamiltonian dicycles avoiding prescribed arcs in tournaments, Graphs and Combinatorics 3 Graph Theory 12 Combinatorial Theory B 46 Watkins Infinite vertex-transitive edge-transitive nontransitive graphs, Proc. Aharoni Infinite highly connected digraphs with no two arc-disjoint spanning trees, J. Theory 13 Algorithms 10 Schwenk Tight bounds on the Chromatic sum of a connected graph, J. Graph Theory 13 Combinatorial Theory B 49 Combinatorial Theory B 50 Combinatorial Theory B 48 Monthly 97 Hajnal , Cambridge University Press , pp. Hutchinson Graphs with homeomorphically irreducible spanning trees, J. Graph Theory 14 Gimbel Partial orders on a fixed graph, in: Contemporary Methods in Graph Theory ed. Bodendiek , Wissenschaftsverlag, Mannheim , pp. Graph Theory, Combinatorics, and Applications Y. Petrovic Kings in k-partite tournaments, Discrete Math. Mothly 99 McGuinness Transient random walks on graphs and metric spaces with applications to hyperbolic surfaces, Proc. Manoussakis A polynomial algorithm for Hamiltonian connectedness in semicomplete digraphs, J. Algorithms 13 Combinatorial Theory B 54 Combinatorial Theory B 57 Richter Minimal graphs with crossing number at least k, J. Combinatorial Theory B 58 Algorithms 15 Woess Vertex-transitive graphs and accessibility, J. Combinatorial Theory B 59 Dejter Highly symmetric subgraphs of hypercubes, J. Algebraic Combinatorics 2 Combinatorial Theory B 60 Combinatorial Theory B 62 Combinatorial Theory B 64 Combinatorial Theory B 65 l Handbook of Combinatorics eds. Combinatorial Theory B66 Richter Relations between crossing numbers of complete graphs and complete bipartite graphs, Amer. Monthly Combinatorial Thoery B 69 Combinatorial Theory B 70 Aldred On the number of cycles in 3-connected cubic graphs, J. Combinatorial Theory B 71 Markvorsen Finite metric spaces of strictly negative type, Linear Algebra and its Applications, Combinatorial Theory B 72 Gorbunov Highly connected sets and the excluded grid theorem, J. Combinatorial Theory B 75 Surveys in Combinatorics eds. Jensen The color space of a graph, J. Graph Theory 34 Gimbel Coloring triangle-free graphs with fixed size, Discrete Math.

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Surveys in combinatorics, By J D Lamb and D A Preece. Abstract. This volume, first published in , is a valuable resource on combinatorics for graduate.

ISBN 0 0. It contains the nine invited papers given at the 16th British Combinatorial Conference , which was held at Queen Mary and Westfield College, London from 7 to 11 July Speakers, titles and abstracts follow. M13 The group M13 has no transitive extension, but the object of the title is the next best thing: We give an elementary construction, based on a moving-counter puzzle on the projective plane of order 3, and provide easy proofs of some of its properties. The Harmonious Chromatic Number and the Achromatic Number The harmonious chromatic number of a graph is the least number of colours in a vertex colouring such that each pair of colours appears on at most one edge. The achromatic number of a graph is the greatest number of colours in a vertex colouring such that each pair of colours appears on at least one edge. This paper is a survey of what is known about these two parameters, in particular we look at upper and lower bounds, special classes of graphs and complexity issues. Computer Construction of Block Designs This paper uses an extended example to illustrate how to put together a BDX program to construct block designs fixed by an automorphism, given its orbit matrix. It shows how to specify the parameters and the structural information of the designs. It discusses the symmetry group of the problem and isomorph rejection. It explains how to choose a good order of generation to minimize the size of the search. It also shows how to estimate the size of a search and how to partition the problem into subproblems which can be searched in parallel on several computers. For certain families of finite arc-transitive graphs, those members possessing subgroups of automorphisms which are quasiprimitive on vertices play a key role. The manner in which the quasiprimitive examples arise, together with their structure, is described. Tree Width and Tangles: We present a duality result and a canonical decomposition theorem tied to this invariant. Several illustrative proofs are sketched. As a by-product, we give an up-to-date account on what is known about complete arcs, minimal blocking sets and k,n -arcs in the desarguesian plane PG 2,q. New perspectives on interval orders and interval graphs Interval orders and interval graphs are particularly natural examples of two widely studied classes of discrete structures: So it is not surprising that researchers in such diverse fields as mathematics, computer science, engineering and the social sciences have investigated structural, algorithmic, enumerative, combinatorial, extremal and even experimental problems associated with them. In this article, we survey recent work on interval orders and interval graphs, including research on on-line coloring, dimension estimates, fractional parameters, balancing pairs, hamiltonian paths, ramsey theory, extremal problems and tolerance orders. We provide an outline of the arguments for many of these results, especially those which seem to have a wide range of potential applications. Also, we provide short proofs of some of the more classical results on interval orders and interval graphs. Our goal is to provide fresh insights into the current status of research in this area while suggesting new perspectives and directions for the future. Approximate Counting I shall survey a range of very basic but provably hard counting problems which have a unifying geometrical theme. For each of them exact evaluation is P-hard but there is no obvious obstruction to the existence of a fast randomised approximation algorithm. I shall outline the techniques which are available and describe what is currently known. In most cases the results obtained only apply to a part of the input so there remain many open questions.

4: Snark (graph theory) - Wikipedia

Surveys in Combinatorics, by J D Lamb, , available at Book Depository with free delivery worldwide.

Tutte and stating that any bridgeless 3-regular graph that requires four colors in an edge coloring must have the Petersen graph as a minor. Robertsonâ€”Seymour theorem Many families of graphs have the property that every minor of a graph in F is also in F; such a class is said to be minor-closed. For instance, in any planar graph , or any embedding of a graph on a fixed topological surface , neither the removal of edges nor the contraction of edges can increase the genus of the embedding; therefore, planar graphs and the graphs embeddable on any fixed surface form minor-closed families. If F is a minor-closed family, then because of the well-quasi-ordering property of minors among the graphs that do not belong to F there is a finite set X of minor-minimal graphs. These graphs are forbidden minors for F: That is, every minor-closed family F can be characterized as the family of X-minor-free graphs for some finite set X of forbidden minors. For example a minor-closed graph family F has bounded pathwidth if and only if its forbidden minors include a forest , [16] F has bounded tree-depth if and only if its forbidden minors include a disjoint union of path graphs , F has bounded treewidth if and only if its forbidden minors include a planar graph , [17] and F has bounded local treewidth a functional relationship between diameter and treewidth if and only if its forbidden minors include an apex graph a graph that can be made planar by the removal of a single vertex. The converse however is not true in general for instance the complete graph K5 in the Petersen graph is a minor but not a topological one , but holds for graph with maximum degree not greater than three. However it is straightforward to construct finite forbidden topological minor characterizations from finite forbidden minor characterizations by replacing every branch set with k outgoing edges by every tree on k leaves that has down degree at least two. Induced minors[edit] A graph H is called an induced minor of a graph G if it can be obtained from an induced subgraph of G by contracting edges. Otherwise, G is said to be H-induced minor-free. The lifting is an operation on adjacent edges. Given three vertices v, u, and w, where v,u and u,w are edges in the graph, the lifting of vuw, or equivalent of v,u , u,w is the operation that deletes the two edges v,u and u,w and adds the edge v,w. In the case where v,w already was present, v and w will now be connected by more than one edge, and hence this operation is intrinsically a multi-graph operation. In the case where a graph H can be obtained from a graph G by a sequence of lifting operations on G and then finding an isomorphic subgraph, we say that H is an immersion minor of G. There is yet another way of defining immersion minors, which is equivalent to the lifting operation. We say that H is an immersion minor of G if there exists an injective mapping from vertices in H to vertices in G where the images of adjacent elements of H are connected in G by edge-disjoint paths. The immersion minor relation is a well-quasi-ordering on the set of finite graphs and hence the result of Robertson and Seymour applies to immersion minors. This furthermore means that every immersion minor-closed family is characterized by a finite family of forbidden immersion minors. In graph drawing , immersion minors arise as the planarizations of non-planar graphs: This allows drawing methods for planar graphs to be extended to non-planar graphs. Shallow minors interpolate between the theories of graph minors and subgraphs, in that shallow minors with high depth coincide with the usual type of graph minor, while the shallow minors with depth zero are exactly the subgraphs. An odd minor restricts this definition by adding parity conditions to these subtrees. If H is represented by a collection of subtrees of G as above, then H is an odd minor of G whenever it is possible to assign two colors to the vertices of G in such a way that each edge of G within a subtree is properly colored its endpoints have different colors and each edge of G that represents an adjacency between two subtrees is monochromatic both its endpoints are the same color. Unlike for the usual kind of graph minors, graphs with forbidden odd minors are not necessarily sparse. A graph H is a bipartite minor of another graph G whenever H can be obtained from G by deleting vertices, deleting edges, and collapsing pairs of vertices that are at distance two from each other along a peripheral cycle of the graph. A bipartite graph G is a planar graph if and only if it does not have the utility graph K3,3 as a bipartite minor. However, when G is part of the input but H is fixed, it can be solved in polynomial time. More specifically, the running time for testing whether H is a minor of G in this case is O n3 , where n is the number of vertices in G and the big O notation hides a constant that depends superexponentially on H; [3] since the original Graph Minors result, this algorithm has been improved to O n2 time. However, in order to apply this result constructively, it is necessary to know what the forbidden minors of the graph family are.

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5: CiteSeerX â€" Citation Query Recent excluded minor theorems for graphs, in: Surveys in combinatorics

Recent Excluded Minor Theorems for Graphs Published in Surveys in combinatorics, (Canterbury), {, London Surveys of excluded minor theorems are.

Plummer, Neil Robertson, Xiaoya Zha , " Robertson has conjectured that the only 3-connected, internally 4-con-nected graph of girth 5 in which every odd cycle of length greater than 5 has a chord is the Petersen graph. We prove this conjecture in the special case where the graphs involved are also cubic. Moreover, this proof does not requ Moreover, this proof does not require the internalconnectivity assumption. An example is then presented to show that the assumption of internal 4-connectivity cannot be dropped as an hypothesis in the original conjecture. We then summarize our results aimed toward the solution of the conjec-ture in its original form. In particular, let G be any 3-connected internallyconnected graph of girth 5 in which every odd cycle of length greater than 5 has a chord. Moreover, M can be partitioned into at most two disjoint non-empty sets where we can precisely describe how these sets are attached to cycle C. Dominic Welsh began writing papers in matroid theory almost forty years ago. Since then, he has made numerous important contributions to the subject. His book Matroid Theory provided the first comprehensive treatment of the subject and has served as an invaluable reference to many workers His book Matroid Theory provided the first comprehensive treatment of the subject and has served as an invaluable reference to many workers in the field. Show Context Citation Context Then G has a subgraph contractible to P In joint work with his student Paul Walton [85], Dominic proved the following result. The only tangential 1-blocks over A permutation graph is a cubic graph admitting a 1-factor M whose complement consists of two chordless cycles. Extending results of Elling-ham and of Goldwasser and Zhang, we prove that if e is an edge of M such that every 4-cycle containing an edge of M contains e, then e is contained in a subdivis Extending results of Elling-ham and of Goldwasser and Zhang, we prove that if e is an edge of M such that every 4-cycle containing an edge of M contains e, then e is contained in a subdivision of the Petersen graph of a special type. In particular, if the graph is cyclically 5-edge-connected, then every edge of M is contained in such a subdivision. Our proof is based on a characterization of cographs in terms of twin vertices. We infer a linear lower bound on the number of Petersen subdivisions in a permutation graph with no 4-cycles, and give a construction showing that this lower bound is tight up to a constant factor.

6: Surveys in combinatorics, - CORE

The British Combinatorial Conference is one of the most well known meetings for combinatorialists. This volume collects the invited talks from the conference held at the University of Kent and together these span a broad range of combinatorial topics.

7: Surveys in Combinatorics,

Surveys in Combinatorics, The book is Surveys in Combinatorics, , edited by R. A. Bailey, London Mathematical Society Lecture Note Series, , Cambridge University Press, Cambridge, pp. ISBN 0 0.

8: BCC - Past Conferences

are uncountable books and surveys.) Any work in which the notion of balance of a polygon plays a role. Example: gain graphs. (Exception: purely topological papers concerning ordinary graph embedding.).

9: DIMACS/DIMATIA/Renyi Working Group on Extremal Combinatorics

The fifteenth British Combinatorial Conference took place in July at the University of Stirling. This volume consists of the *papers presented by the invited lecturers at the meeting, and provides an up-to-date survey of current research activity in several areas of combinatorics and its.*

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