

The mission of the Department of Mathematics is to pursue excellence in teaching, research and service in the area of mathematics.

Our department teaches courses at all levels to students of varying abilities and needs. Our general education courses provide students with the most basic mathematical tools to be productive and knowledgeable citizens in a technological world. Students from other science and technical disciplines learn the mathematics and the reasoning skills necessary to make effective use of mathematics. In all courses we emphasize the rigor as well as the applicability of mathematics while also providing students with an appreciation of the creative part of mathematics.

Graduate students are given the opportunity to learn advanced mathematics for applications and for its own sake. Masters students are provided with skills in a broad range of advanced mathematics and given opportunities to apply these skills to various areas. Doctoral students in addition learn how to conduct independent original research in mathematics and how to connect it with other fields such as Biology, Computer Science, Logistics and Distribution, Medicine etc.

Our research extends the current knowledge base in mathematics and its applications and complements our teaching mission by involving undergraduate and graduate students in research activities.

Through community engagement we provide the academic community as well as the community at large with service in the mathematical area. This ranges from talks at local schools, offering dual credit courses and mentoring to high school students and judging at science fairs to professional service through refereeing, reviewing and hosting of national and international conferences.

Research Areas:

Algebra: commutative structures, complexity, cryptography;

Analysis: foundations, set theory, topological dynamics, functional equations;

Discrete Mathematics: combinatorics, consensus, graph theory, lattices and posets;

Differential Equations: ODE, PDE, control theory, inverse problems, bio-math, medical applications;

Probability and Statistics: large deviations, limit theorems, financial math, change-point analysis, image processing;

There is a good deal of overlap among the research areas; many people work at the intersection of several areas and/or with faculty from other departments. A list of faculty members with their individual research interests is attached as well as a list of recent journal publications by faculty members.

The Department provides a close-knit group of faculty and graduate students where it is easy to join one or more groups to find one's niche. Besides regularly scheduled courses in the core areas of mathematics and applied mathematics we offer many topics courses and independent reading courses and research seminars. Due to our relatively small size, we can tailor the advanced graduate program to an individual student's needs.

Some specific examples of research currently conducted in our department: **Competing Species Models** in mathematical biology, **Resource Location Problems** in discrete math/logistics, **Mathematical Model for Artificial Pancreas** in applications to medicine, **Post Quantum Cryptography** in algebra, **Consensus Methods on Lattices** in discrete mathematics, **Image Analysis** in functional equations/information theory, **Central Limit Theorems** in probability, **Interval Partitions** in combinatorics, **Automorphisms** in both analysis and posets, etc.

We regularly have international faculty visitors from China, Korea and Russia and often graduate students for short term visits. Currently we have two post-docs from Korea, one from China as well as a visiting faculty member from China; all will stay for 1 year. Our full-time faculty and graduate students come from many different countries and many have international collaborations in countries such as Austria, Brazil, China, France, Germany, Italy, Korea, Poland and Russia.

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FACULTY and RESEARCH

Department of Mathematics
University of Louisville

Csaba Biro

Combinatorics, Graph Theory, Partially ordered sets

Beth Bradley

Differential Equations

Udayan Darji

Measure Theory, Topological Dynamics, Permutations

Arnab Ganguly

Stochastic Analysis, Limit Theorems

Ryan Gill

Change-Point Problems, Generalized Linear Models

Changbing Hu

PDEs, Fluid Mechanics, Control Theory

Andre Kezdy

Graph Theory, Combinatorics

Ewa Kubicka

Graph Theory, Combinatorics

Grzegorz Kubicki

Graph Theory, Combinatorial Geometry, Optimal Stopping

Hamid Kulosman

Commutative Algebra

Lee Larson

Real Analysis

Kiseop Lee

Financial Mathematics, Stochastic Analysis, Market Microstructure

Bingtuan Li

DEs, Mathematical Biology

Jiaxu Li

ODEs, Functional DEs, Dynamical Systems, Math. Biology & Medicine

Jinjia Li

Commutative algebra, algebraic geometry

Alica Miller

Topological Dynamics

Robert Powers

Mathematical Social Choice

Thomas Riedel

Functional Equations, Posets

Prasanna Sahoo

Functional Equations, Inequalities on Algebraic Structures, Mathematical Statistics, Image Processing

Steven Seif

Complexity, Universal Alg., Semigroups

Daniel Smith

Multivariate Public Key Cryptography

David Swanson

Real Analysis, PDEs

Cristina Tone

Probability, Stochastic Processes, Limit Theorems, Random Fields

Jake Wildstrom

Combinatorics, Logistics

Stephen Young

Algorithms, Combinatorics, Graph Theory

Yongzhi Xu

Applied Partial Differential Equations, Inverse Scattering Problems, Acoustic Imaging, Cancer Modeling

Wei-Bin Zeng

Probability and Statistics, Wavelets
Functional Equations

For more information see

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MR3022416 Pending Liu, Keji; Xu, Yongzhi; Zou, Jun A parallel radial bisection algorithm for inverse scattering problems. *Inverse Probl. Sci. Eng.* 21 (2013), no. 2, 197–209. 65N21 (35P25 35R30 76Q05 78A46)

MR3055747 Pending Tone, Cristina Kernel density estimators for random fields satisfying an interlaced mixing condition. *J. Statist. Plann. Inference* 143 (2013), no. 8, 1285–1294. 62G07 (60F05 60G60)

MR3048835 Reviewed Goddard, Wayne; Kubicka, Ewa M.; Kubicki, Grzegorz An efficient algorithm for stopping on a sink in a directed graph. *Oper. Res. Lett.* 41 (2013), no. 3, 238–240. 05C20

MR3053850 Pending Balogh, Jozsef; Kemkes, Graeme; Lee, Choongbum; Young, Stephen J. Towards a weighted version of the Hajnal-Szemerédi theorem. *Combin. Probab. Comput.* 22(2013), no. 3, 346–350. 05C35 (05C70 05C72 05D40)

MR3043119 Reviewed Powers, Robert C.; White, Jeremy M. Injectivity and weak ternary separation. *Discrete Appl. Math.* 161 (2013), no. 10-11, 1646–1650. 05D05

MR3028206 Reviewed Faiziev, Valerii A.; Powers, Robert C.; Sahoo, Prasanna K. An alternative Cauchy functional equation on a semigroup. *Aequationes Math.* 85 (2013), no. 1-2, 131–163. 39B52 (39B82)

MR3011842 Reviewed Byrnes, C. I.; Gilliam, D. S.; Hu, C.; Shubov, V. I. Asymptotic regulation for distributed parameter systems via zero dynamics inverse design. *Internat. J. Robust Nonlinear Control* 23 (2013), no. 3, 305–333. (Reviewer: Khalid Kassara) 93C20 (93D25)

MR2995064 Reviewed McMorris, F. R.; Powers, R. C. Majority decision on median semilattices. *Math. Social Sci.* 65 (2013), no. 1, 48–51. 91B14 (06A11)

MR3088416 Pending Darji, Udayan B.; Seif, Steve W. A note on decidability of cellularity. *J. Cell. Autom.* 7 (2012), no. 5-6, 509–514 (2013). 68Q80 (03B25 37B15 68Q25)

MR3022275 Reviewed Huang, Mingzhan; Li, Jiaxu; Song, Xinyu; Guo, Hongjian Modeling impulsive injections of insulin: towards artificial pan-creas. *SIAM J. Appl. Math.* 72 (2012), no. 5, 1524–1548. 92B05 (34A37 34C60 92C50)

MR2978784 Reviewed Lewis, Mark A.; Li, Bingtuan Spreading speed, traveling waves, and minimal domain size in impulsive reaction-diffusion models. *Bull. Math. Biol.* 74 (2012), no. 10, 2383–2402. 92D40

MR2984127 Reviewed Li, Bingtuan Traveling wave solutions in a plant population model with a seed bank. *J. Math. Biol.* 65 (2012), no. 5, 855–873. (Reviewer: Peixuan Weng) 92D40 (45G10 92D25)

MR2978448 Reviewed Kulosman, Hamid; Miller, Alica A generalization of semiflows on monomials. *Math. Bohem.* 137 (2012), no. 1, 99–111. 37B05 (13F20)

MR2965315 Reviewed Han, Sunghyu; Kim, Jon-Lark Computational results of duadic double circulant codes. *J. Appl. Math. Comput.* 40 (2012), no. 1-2, 33–43. (Reviewer: Steven T. Dougherty) 94B05 (11T71)

MR2964619 Reviewed Bernardes, Nilson C., Jr.; Darji, Udayan B. Graph theoretic structure of maps of the Cantor space. *Adv. Math.* 231 (2012), no. 3-4, 1655–1680. (Reviewer: Steven M. Pederson) 37B05 (05C20 22D05 54H20)

MR2957883 Reviewed Lim, Johan; Lee, Kiseop; Yu, Donghyeon; Liu, Haiyan; Sherman, Michael Parameter estimation in the spatial auto-logistic model with working independent subblocks. *Comput. Statist. Data Anal.* 56 (2012), no. 12, 4421–4432. 62M30 (62M09 62P10)

MR2977193 Reviewed Kim, Hyun Kwang; Kim, Dae Kyu; Kim, Jon-Lark Type I codes over $GF(4)$. *Ars Combin.* 106 (2012), 173–191. 94B27

MR2948387 Indexed Faiziev, Valeriy A.; Sahoo, Prasanna K. Stability of a functional equation of whitehead on semigroups. *Ann. Funct. Anal.* 3 (2012), no. 2, 32–57. 39B82 (39B52)

MR2928245 Reviewed Tone, Cristina A functional central limit theorem for empirical processes under a strong mixing condition. *Stat. Inference Stoch. Process.* 15 (2012), no. 2, 177–192. 60F17 (60G10 60G60 62G20)

MR2962636 Reviewed Chávez, Esteban A.; Sahoo, Prasanna K. Jensen and quadratic functional equations on semigroups. *Nonlinear analysis*, 127–145, Springer Optim. Appl., 68, Springer, New York, 2012. (Reviewer: Valeriy A. Faiziev) 39B52

MR2935655 Reviewed Li, Jinjia Frobenius criteria of freeness and Gorensteinness. *Arch. Math. (Basel)* 98 (2012), no. 6, 499–506. (Reviewer: Alberto F. Boix) 13A35 (13C14 13D07 13H10)

MR2953165 Indexed Hu, Changbing; Swanson, David; Xu, Yongzhi A free boundary problem for a parabolic equation with an integral condition. *Adv. Appl. Math. Sci.* 11 (2012), no. 3, 99–113. 35R35 (35K10)

MR2925144 Reviewed Das, Manav The upper entropy index of a set and the Hausdorff dimension of its hyperspace. *Monatsh. Math.* 166 (2012), no. 3–4, 371–378. (Reviewer: Ezequiel Rela) 28A78 (28A80)

MR2921012 Reviewed Liu, Lihan; Qin, Yuehai; Xu, Yongzhi; Zhao, Yuqiu The uniqueness and existence of solutions for the 3D Helmholtz equation in a step-index waveguide with unbounded perturbation. *Math. Methods Appl. Sci.* 35 (2012), no. 7, 857–868. 35J05 (35A01 35A02 78A50)

MR2901546 Reviewed Li, Jiaxu; Wang, Minghu; De Gaetano, Andrea; Palumbo, Pasquale; Panunzi, Simona The range of time delay and the global stability of the equilibrium for an IVGTT model. *Math. Biosci.* 235 (2012), no. 2, 128–137. 92C40 (92C30)

MR2902652 Reviewed Garrod, Bryn; Kubicki, Grzegorz; Morayne, Michał How to choose the best twins. *SIAM J. Discrete Math.* 26 (2012), no. 1, 384–398. (Reviewer: Vladimir Mazalov) 60G40 (05D40 91B06)

MR2951328 Reviewed Aguilar-Melchor, Carlos; Gaborit, Philippe; Kim, Jon-Lark; Sok, Lin; Solé, Patrick Classification of extremal and s -extremal binary self-dual codes of length 38. *IEEE Trans. Inform. Theory* 58 (2012), no. 4, 2253–2262. 94B05

MR2900880 Reviewed Kulosman, Hamid Comparison of c and d -sequences. *J. Algebra Appl.* 11 (2012), no. 1, 1250010, 10 pp. (Reviewer: Valentina Barucci) 13A30 (13A15 13G05)

MR2899902 Reviewed Han, Sunghyu; Kim, Jon-Lark; Lee, Heisook; Lee, Yoonjin Construction of quasi-cyclic self-dual codes. *Finite Fields Appl.* 18 (2012), no. 3, 613–633. 94B15 (94B05)

MR2891348 Reviewed Li, Bingtuan Traveling wave solutions in partially degenerate cooperative reaction-diffusion systems. *J. Differential Equations* 252 (2012), no. 9, 4842–4861. 35K40 (35C07 35K57)

MR2886744 Reviewed Groby, Jean-Philippe; Ogam, Erick; Wirgin, Ar-mand; Xu, Yongzhi Recovery of a material parameter of a soft elastic layer. *Complex Var. Elliptic Equ.* 57 (2012), no. 2-4, 317–336. (Reviewer: Valeri G. Yakhno) 74H05 (65N21 74H45 74J25 86A15)

MR2886737 Reviewed Qiao, Yuying; Xu, Yongzhi; Yang, Heju Poincaré-Bertrand transformation formula of Cauchy-type singular integrals in Clifford analysis. *Complex Var. Elliptic Equ.* 57(2012), no. 2-4, 197–217. (Reviewer: Baruch A. Schneider) 30G35 (30E20)

MR2876761 Reviewed Cochran, John M.; Xu, Yongzhi A temperature-dependent age-structured mosquito life-cycle model. *Appl. Anal.* 91 (2012), no. 2, 403–418. 92D25 (35L50 35L60)

MR2870285 Reviewed Gibson, Lee R.; Powers, Robert C. An extension of McGarvey's theorem from the perspective of the plurality collective choice mechanism. *Soc. Choice Welf.* 38(2012), no. 1, 101–108. (Reviewer: Chiaki Hara) 91B14

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MR2843288 Reviewed Zhang, Liang; Li, Bingtuan Traveling wave solutions in an integro-differential competition model. *Discrete Contin. Dyn. Syst. Ser. B* 17 (2012), no. 1, 417–428. (Reviewer: Debasis Mukherjee) 92D40 (34K06 45K05)

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MR2953525 Reviewed Sahoo, Prasanna K. Quasi-mean value theorems for symmetrically differentiable functions. *Tamsui Oxf. J. Inf. Math. Sci.* 27 (2011), no. 3, 279–301. (Reviewer: Pál Burai) 26A24 (26D10 39B22)

MR2911191 Reviewed Jobson, Adam S.; Kézdy, André E.; Snevily, Hunter S.; White, Susan C. Ramsey functions for quasi-progressions with large diameter. *J. Comb.* 2 (2011), no. 4, 557–573. (Reviewer: Tom Sanders) 05D10 (11B25)

MR2931466 Reviewed Smith-Tone, Daniel On the differential security of multivariate public key cryptosystems. *Post-quantum cryptography*, 130–142, *Lecture Notes in Comput. Sci.*, 7071, Springer, Heidelberg, 2011. (Reviewer: Michael M. Dediu) 94A60 (81P94)

MR2900767 Reviewed Miller, Alica Almost periodicity and discrete almost periodicity in semiflows. *Math. Commun.* 16 (2011), no. 2, 447–453. (Reviewer: Lori Alvin) 37B05 (37B25 54H20)

MR2876194 Reviewed Dunn, Charles; Nordstrom, Jennifer Firkins; Naymie, Cassandra; Pitney, Erin; Sehorn, William; Suer, Charlie Clique-relaxed graph coloring. *Involve* 4 (2011), no. 2, 127–138. (Reviewer: A. G. Thomason) 05C15 (05C57)

MR2871713 Reviewed Kim, Jon-Lark; Kim, Seog-Jin The 2-distance coloring of the Cartesian product of cycles using optimal Lee codes. *Discrete Appl. Math.* 159 (2011), no. 18, 2222–2228. 05C15 (05C76 94B15)

MR2895281 Reviewed Kulosman, Hamid; Miller, Alica Zero-divisor graphs of some special semigroups. *Far East J. Math. Sci. (FJMS)* 57 (2011), no. 1, 63–90. (Reviewer: Tongsuo Wu) 20M14 (05C25 05C75 06A12)

MR2852159 Reviewed Kulosman, Hamid; Miller, Alica Adjoining idempotents to semigroups. *Int. J. Algebra* 5 (2011), no. 17-20, 897–908. (Reviewer: Graham T. Clarke) 20M14 (20M12)

MR2798505 Indexed Estabrook, George F.; McKee, Terry A.; Mulder, Henry Martyn; Powers, Robert C.; Roberts, Fred S. The contributions of F. R. McMorris to discrete mathematics and its applications. *Advances in interdisciplinary applied discrete mathematics*, 225–241, *Interdiscip. Math. Sci.*, 11, World Sci. Publ., Hackensack, NJ, 2011. 01A70 (05Cxx 91Bxx)

MR2798501 Reviewed Powers, Robert C. Consensus centered at majority rule. *Advances in interdisciplinary applied discrete mathematics*, 149–166, *Interdiscip. Math. Sci.*, 11, World Sci. Publ., Hackensack, NJ, 2011. (Reviewer: Karl-Dieter Crisman) 91B14

MR2832328 Reviewed Dong, Jianrong; Fernández-Baca, David; McMorris, F. R.; Powers, Robert C. An axiomatic study of majority-rule (+) and associated consensus functions on hierarchies. *Discrete Appl. Math.* 159 (2011), no. 17, 2038–2044. 05C90 (05C05 91B14)

MR2840570 Reviewed Miller, Alica Some properties of semiflows involving syndetic subsemigroups of the acting semigroup. *JP J. Geom. Topol.* 11 (2011), no. 1, 1–18. (Reviewer: Radhakrishnan Nair) 37B05 (54H20)

MR2819933 Reviewed Das, M.; Edgar, G. A. Finite type, open set conditions and weak separation conditions. *Nonlinearity* 24 (2011), no. 9, 2489–2503. (Reviewer: Qiuli Guo) 28A78 (28A80)

MR2792477 Expansion Yuan, Xiaobin; Rai, Shesh N. Confidence intervals for survival probabilities: a comparison study. *Comm. Statist. Simulation Comput.* 40 (2011), no. 7, 978–991.

MR2838861 Reviewed Joyner, David; Kim, Jon-Lark Selected unsolved problems in coding theory. *Applied and Numerical Harmonic Analysis*. Birkhäuser/Springer, New York, 2011. xii+200 pp. ISBN: 978-0-8176-8255-2 (Reviewer: Bal Kishan Dass) 94-02 (05Bxx 94B99)

MR2810673 Reviewed Wildstrom, D. Jacob Dynamic resource location with tropical algebra. *Linear Algebra Appl.* 435 (2011), no. 7, 1796–1811. (Reviewer: Paul A. Dreyer Jr.) 05C85 (05C25 15A80 90B80)

MR2802981 Reviewed Hu, Changbing Global strong solutions of Navier-Stokes equations with interface boundary in three-dimensional thin domains. *Nonlinear Anal.* 74 (2011), no. 12, 3964–3997. 35Q30 (35D35 76D03 76D05)

MR2802113 Reviewed D'Aniello, Emma; Darji, Udayan B. Chaos among self-maps of the Cantor space. *J. Math. Anal. Appl.* 381 (2011), no. 2, 781–788. (Reviewer: Steven M. Pederson) 37B40 (37B10)

MR2793128 Indexed Swanson, David The band around a convex body. *College Math. J.* 42 (2011), no. 1, 15–24. 52A38 (52A40)

MR2794373 Reviewed Darji, U. B.; Mitchell, J. D. Approximation of automorphisms of the rationals and the random graph. *J. Group Theory* 14 (2011), no. 3, 361–388. (Reviewer: Primož Moravec) 20F28 (05C25 05C80 20B27)

MR2814248 Reviewed Kulosman, Hamid; Wang, Minghu A generalization of Alon's combinatorial Nullstellensatz. *JP J. Algebra Number Theory Appl.* 20 (2011), no. 1, 61–75. (Reviewer: Subramanian Visweswaran) 13F20

MR2793897 Reviewed Li, Bingtuan; Zhang, Liang Travelling wave solutions in delayed cooperative systems. *Nonlinearity* 24 (2011), no. 6, 1759–1776. (Reviewer: Yifu Wang) 35K51 (35C07 35K57 45K05 92D25)

MR2781771 Indexed Bolton, Jeremy; Gader, Paul; Frigui, Hichem; Torrione, Pete Random set framework for multiple instance learning. *Inform. Sci.* 181 (2011), no. 11, 2061–2070. 68T05

MR2784004 Reviewed Banach, Taras; Vovk, Myroslava; Wójcik, Michał Ryszard Connected economically metrizable spaces. *Fund. Math.* 212 (2011), no. 2, 145–173. (Reviewer: Klaas Pieter Hart) 54D05 (54B30 54C30 54F15)

MR2776146 Reviewed Kim, Gwang Hui; Sahoo, Prasanna K. Stability of some functional equations related to distance measures—I. *Appl. Math. Lett.* 24 (2011), no. 6, 843–849. 39B82 (39B22)

MR2754401 Reviewed Tone, Cristina Central limit theorems for Hilbert-space valued random fields satisfying a strong mixing condition. *ALEA Lat. Am. J. Probab. Math. Stat.* 8 (2011), 77–94. 60F05 (60B12 60G60)

MR2761014 Reviewed Kubicka, Ewa M.; McKeon, Kathleen A. An application of level sequences to parallel generation of rooted trees. *J. Combin. Math. Combin. Comput.* 76 (2011), 33–58. 05C85

MR2754354 Reviewed Miller, Alica Envelopes of syndetic subsemigroups of the acting topological semigroup in a semiflow. *Topology Appl.* 158 (2011), no. 3, 291–297. (Reviewer: Lori Alvin) 54H20 (37B05)

MR2741043 Reviewed Chávez, Esteban A.; Sahoo, Prasanna K. On a functional equation arising from number theory. *Appl. Math. Lett.* 24 (2011), no. 3, 344–347. 39B52 (11Z05)

MR2792582 Reviewed Tone, Cristina A central limit theorem for multivariate strongly mixing random fields. *Probab. Math. Statist.* 30 (2010), no. 2, 215–222. (Reviewer: Alexander V. Bulinskiĭ) 60F05 (60G10 60G60)

MR2758445 Expansion Wang, Xiaohui; Baldwin, Su; Wainer, Howard; Bradlow, Eric T.; Reeve, Bryce B.; Smith, Ashley W.; Bellizzi, Keith M.; Baumgartner, Kathy B. Using testlet response theory to analyze data from a survey of attitude change among breast cancer survivors. *Stat. Med.* 29 (2010), no. 19, 2028–2044.

MR2786958 Reviewed Lee, Kiseop; Zeng, Yong Risk minimization for a filtering micromovement model of asset price. *Appl. Math. Finance* 17 (2010), no. 2, 177–199. (Reviewer: Philip Protter) 60H30 (60G35 60G44 60G48 60H10 91G80)

MR2772893 Reviewed Dougherty, Steven T.; Kim, Jon-Lark; Liu, Hongwei Constructions of self-dual codes over finite commutative chain rings. *Int. J. Inf. Coding Theory* 1 (2010), no. 2, 171–190. (Reviewer: Asha Rao) 94B05 (94B60)

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MR2753612 Reviewed Biswas, Animikh; Swanson, David Navier-Stokes equations and weighted convolution inequalities in groups. *Comm. Partial Differential Equations* 35 (2010), no. 4, 559–589. (Reviewer: Michael J. Carley) 35Q30 (35B65 43A70 76D03)

MR2741283 Reviewed Gibson, Lee R.; Pivarski, Melanie Isoperimetric profiles on the pre-fractal Sierpinski carpet. *Fractals* 18 (2010), no. 4, 433–449. 28A80

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MR2761221 Indexed Jung, S.-M.; Moslehian, M. S.; Sahoo, P. K. Stability of a generalized Jensen equation on restricted domains. *J. Math. Inequal.* 4 (2010), no. 2, 191–205. 39B82 (39B55)

MR2661772 Reviewed Byrnes, C. I.; Gilliam, D. S.; Hu, C.; Shubov, V. I. Zero dynamics boundary control for regulation of the Kuramoto-Sivashinsky equation. *Math. Comput. Modelling* 52(2010), no. 5-6, 875–891. (Reviewer: Marek Majewski) 93C20 (93B05)

MR2680605 Reviewed Gupta, Arjun K.; Zeng, Wei-Bin; Wu, Yanhong Probability and statistical models. Foundations for problems in reliability and financial mathematics. Birkhäuser Boston, Inc., Boston, MA, 2010. x+267 pp. ISBN: 978-0-8176-4986-9 60-01 (60K05 60K10 62-01)

MR2674398 Reviewed Perry, Jonathan; Powers, Robert C. Anonymity, monotonicity, and quota pair systems. *Math. Social Sci.* 60 (2010), no. 1, 57–60. (Reviewer: Jordi Massó) 91B12 (91B14)

MR2675325 Indexed Tenekedjiev, Kiril; Zurada, Jacek M. Guest editorial: intelligent systems. *Int. J. Gen. Syst.* 39 (2010), no. 5, 453–455. 68-06

MR2664989 Reviewed Kim, Jon-Lark; Kim, Seog-Jin Identifying codes in q -ary hypercubes. *Bull. Inst. Combin. Appl.* 59 (2010), 93–102. 94B60 (05C90)

MR2645978 Reviewed Han, Sunghyu; Kim, Jon-Lark Formally self-dual additive codes over F_4 . *J. Symbolic Comput.* 45 (2010), no. 7, 787–799. (Reviewer: Jay A. Wood) 94B05

MR2595024 Reviewed Wildstrom, D. Jacob Resource relocation on asymmetric networks. *J. Graph Algorithms Appl.* 14 (2010), no. 2, 149–163. (Reviewer: Sanming Zhou) 05C85 (90B10)

MR2602064 Reviewed Swanson, David A characterization of Sobolev spaces via local derivatives. *Colloq. Math.* 119 (2010), no. 1, 157–167. (Reviewer: Kai Rajala) 46E35 (26B35)

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MR2591765 Reviewed Darji, U. B.; White, S. C. Haar ambivalent sets in the space of continuous functions. *Acta Math. Hungar.* 126 (2010), no. 3, 230–240. (Reviewer: Pavel Kostyrko) 26A27 (28C20)

MR2576187 Indexed Faiziev, Valeriĭ A.; Riedel, Thomas Stability of Jensen functional equation on semigroups. *J. Math. Anal. Appl.* 364 (2010), no. 2, 341–351. 39B52 (39B82)

MR2565636 Reviewed Powers, R. C. Maskin monotonic aggregation rules and partial anonymity. *Econom. Lett.* 106 (2010), no. 1, 12–14. 91B14