

DR. AYMAN BADAWI COMPLETE CV

Professor of Mathematics

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- (4) Birth date: 2/14/1963
- (5) Status: Married To Rawya Abuhijleh and I have two children (Nadeem (14 years old) and Raneem (8 years old))

1. Research Interest

(ALGEBRA) Commutative Ring Theory : Multiplicative Ideal Theory. My most work is devoted to ϕ -Commutative Rings: a class of commutative rings that I defined and it contains the class of integral domains. My work focuses on : ϕ -Valuation domains (ϕ -Chained rings), ϕ -Pseudo-Valuation rings, ϕ -Integral Closure of rings, ϕ -Noetherian rings, ϕ -Prüfer rings, ϕ -Dedekind rings, and ϕ -Krull rings. Other interests include : n -Absorbing Ideals (a concept that I defined and it is a generalization of the concept of prime ideals), Finite Fields, Zero-Divisor Graphs, Total Graphs, and π -Regular rings.

Publications

- (1) A. Badawi, "On the annihilator graph of a commutative ring," Comm. Algebra , to appear in Vol. 42(1), 1-14 (2014). DOI 10.1007/978-1-4614-6170-8.
- (2) A. Badawi and D. F. Anderson, "The generalized total graph of a commutative ring," Journal of Algebra and Its Applications (JAA), .Vol. 12, No. 5 (2013). DOI: 10.1142/S021949881250212X .
- (3) A. Badawi, Author of a long essay on "Matrix Algebra, Basics of," a chapter in Encyclopedia of Social Network Analysis and Mining, to appear in (2014) by Springer.
- (4) A. Badawi and Ahmad Yousef Darani, On weakly 2-absorbing ideals of commutative rings, Houston Journal of Math, Vol. 39(2), 441-452 (2013).
- (5) A. Badawi and D. F. Anderson, On the total graph of a commutative ring without the zero element, Journal of Algebra and its applications (JAA) 11(4), (2012).
- (4) A. Badawi, A Characterization of normal subgroups via n -closed sets (suitable for undergraduate Math. Students), Adv. Studies Contemp. Math. 22(2), 233-237 (2012).

- (6) A. Badawi and D. F. Anderson, Von Neumann Regular and Related Elements in Commutative Rings, *Algebra Colloquium* 19, 1017-1040 (2012).
- (7) A. Badawi and D. F. Anderson, ON n -ABSORBING IDEALS OF COMMUTATIVE RINGS, *Communications in Algebra* 39, 16461672 (2011).
- (8) A. Badawi, "On ϕ -rings with divided nil ideal", Chapter in the book : *Commutative Algebra And Its Applications*, 21-40(2009), Walter De Gruyter, Germany, ISBN 978-3-11-020746-0
- (9) A. Badawi, D. F. Anderson, D. E. Dobbs and J. Shapiro, "Divisibility properties in ultra-powers of commutative ring", Chapter in the book : *Commutative Algebra And Its Applications*, 9-19(2009), Walter De Gruyter, Germany, ISBN 978-3-11-020746-0
- (10) A. Badawi and D.F. Anderson, "The total graph of a commutative ring," *J. Algebra* 320 (2008), 2706-2719.
- (11) A. Badawi and A. Jaballah, "Some finiteness conditions on the set of overrings of a ϕ -ring," *Houston J. Math.* 34(2) (2008), 397-407.
- (12) A. Badawi and D.F. Anderson, "On the zero-divisor graph of a ring," *Comm. Algebra* 36(2008), 3073-3092.
- (13) A. Badawi, "On 2-absorbing ideals of commutative rings," *Bull. Austral. Math. Soc.* 75(2007), 417-429.
- (14) A. Badawi, "On Pseudo-almost valuation domains," *Comm. Algebra* 35(2007), 1167-1181.
- (15) A. Badawi and Thomas Lucas, "on ϕ -Mori rings," *Houston J. Math.* 32(2006), 1-31.
- (16) A. Badawi and D. E. Dobbs, "Strong ring extensions and ϕ -pseudo-valuation rings," *Houston J. Math.* 32(2006), 379-398.
- (17) A. Badawi, "Factoring nonnil ideals as a product of prime and invertible ideals," *Bulletin of the London Math. Society* 37(2005), 665-672.
- (18) A. Badawi and D. F. Anderson, "on ϕ -Dedekind rings and ϕ -Krull rings," *Houston J. Math.* 31(2005), 1007-1022.
- (19) A. Badawi and D. F. Anderson, "On ϕ -Prufer rings and ϕ -Bezout rings," *Houston J. Math.* 30(2004), 331-343.
- (20) A. Badawi, "A Characterization of valuation domains via m -canonical ideals," *Comm. Algebra* 32(2004), 4363-4374.
- (21) A. Badawi, "On nonnil-Noetherian rings," *Comm. Algebra* 31(2003), 1669-1677.

- (22) A. Badawi and D. F. Anderson, "Divisibility conditions in commutative rings with zero-divisors," *Comm. Algebra* 38(2002), 4031-4047.
- (23) A. Badawi and E. Houston, "Powerful ideals, strongly primary ideals, almost pseudo-valuation domains, and conducive domains," *Comm. Algebra* 30(2002), 1591-1606.
- (24) A. Badawi, A. Y. M. Chin, and H. V. Chen, "On rings with near idempotent elements," *International J. of Pure and Applied Mathematics*, 1(2002), 255-261
- (25) A. Badawi, "On Divided rings and ϕ -pseudo-valuation rings," *International J. Comm. Rings (IJCR)*, Vol. 1(2002), 51-60.
- (26) A. Badawi and D. F. Anderson, "On root closure in commutative rings," *Arabian J. of Science and Engineering (Arabian J. Sci. Eng)*, Vol. 26, 1C(2001), 17-30.
- (27) A. Badawi and David E. Dobbs, "On Locally divided rings and going down rings," *Comm. Algebra*. 29(2001), 2805-2825.
- (28) A. Badawi, "On ϕ -chained rings and ϕ -pseudo-valuation rings," *Houston J. Math* 27(2001), 725-736.
- (29) A. Badawi, "On ϕ -pseudo-valuation rings, II," *Houston J. Math*. 26(2000), 473-480.
- (30) A. Badawi, "Remarks on pseudo-valuation rings", *Comm. Algebra* 28(2000), 2343-2358.
- (31) A. Badawi, "On Chained overrings of pseudo-valuation rings," *Comm. Algebra* 28(2000), 2359-2366.
- (32) A. Badawi and D. F. Anderson and D. E. Dobbs "Pseudo-valuation rings II," *Boll. Un. Mat. Ital. B*(8)3(2000), 535-545.
- (33) A. Badawi, "On divided commutative rings," *Comm. Algebra* 27(1999), 1465-1474.
- (34) A. Badawi, "On comparability of ideals of commutative rings," *Comm. Algebra* 26(1998), 793-802.
- (35) A. Badawi, "On Abelian π -regular rings," *Comm. Algebra* 25(1997), 1009-1021.
- (36) A. Badawi, "On domains which have prime ideals that are linearly ordered," *Comm. Algebra* 23(1995), 4365-4373.
- (37) A. Badawi, "On semicommutative π -regular rings," *Comm. Algebra* 22(1994), 151-157.
- (38) A. Badawi, "Rn contains a division ring iff R does," *Amer. Math. Monthly*, 100(1994), 679-680.
- (39) A. Badawi, "A Counter example for a question on pseudo-valuation rings," *Abelian Groups, Rings, Modules, and Homological Algebra*, Chapman & Hall/CRC, Vol. 249 (2006), 23-27.

(40) A. Badawi and Thomas Lucas, "Rings with prime nilradical," *Arithmetical Properties of Commutative Rings and Monoids*, Chapman & Hall/CRC, Vol. 241(2005), 198–212.

(41) A. Badawi, "On the complete integral closure of rings that admit a ϕ -strongly prime ideal," *Lecture Notes Pure Appl. Math.* Vol. 231(2002), 15-22. Marcel Dekker, New York/Basel.

(42) A. Badawi, "Pseudo-valuation domains: A Survey," *Proceedings of the Third Palestinian International Conference on Mathematics*, 38-59(2002), Word Scientific Publishing Co., New York/London

(43) A. Badawi, "On ϕ -pseudo-valuation rings," *Advances in commutative ring theory*, *Lecture Notes Pure Appl. Math.* Vol.205(1999), 101-110, Marcel Dekker, New York/Basel.

(44) A. Badawi, "A visit to valuation and pseudo-valuation domains," *Lecture Notes Pure Appl. Math.* Vol. 185(1995), 57-69, Marcel Dekker, New York/Basel.

(45) A. Badawi and D. E. Dobbs, "Some examples of locally divided rings," *Lecture Notes Pure Appl. Math.*, Vol. 220(2001), 73-83. Marcel Dekker, New York/Basel.

(46) A. Badawi and D. F. Anderson, "Conditions equivalent to seminormality in certain classes of commutative rings," *Lecture Notes Pure Appl. Math.*, Vol. 220(2001), 49-59, Marcel Dekker, New York/Basel.

(47) A. Badawi and D. F. Anderson and D. E. Dobbs, "Pseudo-valuation rings," *Lecture Notes Pure Appl. Math.* Vol. 185(1997), 57-67, Marcel Dekker, New York/Basel.

Books

(1) A. Badawi, "Abstract Algebra Manual: Problems and Solutions," published by Nova Science, 2nd Edition (New York) (2004), ISBN 1-59033-924-X.

(2) A. Badawi, "Focus on Commutative Rings Research," Nova Science, New York, U. S. A. (2006), ISBN 1-60021-065-1.

Conferences and research papers presented

Invited speaker (30 minutes), INTERNATIONAL CONFERENCE ON ALGEBRA IN HONOUR OF PATRICK SMITH'S AND JOHN CLARK'S 70TH BIRTHDAYS, August 12-15, 2013. Balikesir – TURKEY.

(1) Invited speaker (30 minutes), International Conference on Rings, Near-rings and Radicals, July 7-13, 2013, Bloemfontein, South Africa.

- (2) Invited speaker (20 minutes), First International Western Balkans Conference On Math. , May30-June 1, 2013, Elbasan, Albania.
- (3) Invited Speaker (50 minutes) for the Algebra and Topology Workshop, Tunis, Jan. 30-Jan 31, (2013)
- (4) 30-minute invited speaker for the International Conference on Integer-valued Polynomials and Commutative Rings, Graz, Austria, Dec-16 to Dec-18, (2013).
- (5) Key-note Speaker (50 minutes) for the Algebra Workshop, Ardabil, Iran, August 30-sept 1, (2012).
- (6) Invited 20-minutes talk for the International Congress in Honor of Professor H. M. Srivastava, Uludag University, Bursa, Turkey, August 23-26 (2012).
- (7) Contributing 20-minutes talk for Palestine Conference on Math. AND Physics, Hebron, Palestine , July 16-20 (2012).
- (8) Invited 30-Minutes Speaker for the conference on Commutative Rings and their Modules, Bressanone/Brixen, Italy, June 4-8 (2012).
- (9) Key-note Speaker (50 minutes) for the Algebra Workshop, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, April 28, (2012).
- (10) Contributing 15-minutes talk, UAE-Math Day, April 12, (2012).
- (11) Marco Fontana and I organized a special session on Commutative Rings and Modules for the Fourth International Conference on Mathematical Sciences-ICM2012 in Al-Ain, UAE, March 11-14, (2012). I also presented a talk in that session.
- (12) Key-note speaker (40 minutes) for the CCSCM2012, February 9-10, Melaka, Malaysia (2012).
- (13) Invited 20-minutes speaker for the International Conference on the Theory of Radicals, Rings and Modules, Muscat, Oman, Jan. 20-Jan. 26 (2012).
- (14) Invited 20-minutes speaker for the special session on Rings and Radicals, Joint Congress of the South African and American Mathematical Societies Mathematics for Tomorrow, Port-Elizabeth, South Africa, Nov. 29 - Dec. 3, (2011).
- (15) Invited 20-minutes speaker for the 2nd International Conference on Mathematics AND Information Science, Sohag, Egypt, Sept. 10-13, (2011).
- (16) Invited 20-minutes speaker(I gave two talks a total of 40 minutes), The 24th International Congress of the Jangjeon Mathematical Society, Konya-Turkey, July 20th to 23rd, (2011).
- (17) Invited 20 minutes speaker, AMS-Special Session on Commutative Rings,

University of Iowa, USA, March 18-March 20, 2011.

- (18) Invited 30 minutes speaker, ICMS 2010, Bolu, Turkey, Nov 23-Nov 27, 2010 .
- (19) Invited 30 minutes speaker, Third International Conference on Integer Valued Polynomials and Unsolved Problems in Commutative Algebra," Marseille, France, Nov 28-Dec 3, 2010 .
- (20) Twenty-minutes speaker for the Algebra Conference (ICA 2010) which dedicated for the 70th Birthday of Prof. Shum Kar-Ping at The Faculty of Mathematics and Natural Sciences Gadjah Mada University, Yogyakarta, Indonesia 7-10 October 2010.
- (21) Twenty-minutes speaker for the Math&Physics Conference, Nablus, West Bank, Palestine, Najah Univ August 2-August 4, 2010
- (22) Twenty-minutes speaker for the Algebra Conference Brasilia (Brazil) July 25-July30, 2010
- (23) Invited Speaker for the Commutative Algebra Conference Rome (Italy) May 19-May21, 2010
- (24) Twenty-minutes speaker for the Math Conference Kuala Lumpur, Malaysia, October 2009
- (25) Invited speaker (40 minutes) For the Commutative Algebra Conference, June 15-June 21, 2009. In Honour of 60th birthday of David F. Anderson, GyouengJu, South Korea.
- (26) Invited speaker 20 minutes, Special Session on Commutative Algebra, AMS-Annual meeting, Washington DC, Jan4-Jan 8, 2009.
- (27) Invited speaker and organizer of the special session on Commutative Algebra, Univ. of Delhi, India, Dec 18-Dec 20, 2008.
- (28) Invited speaker 30 minutes, Algebra Workshp, Sultan Qaboos University, Muscat, Oman Dec 14 2008.
- (29) Thirty-minutes invited speaker at the Algebra Conference, Fes-2008, Ifran, Morocco.
- (30) Fifteen-minute speaker at the UAE-Math-Day, April 2007, "On the total graph of a commutative ring."
- (31) Forty-minutes invited Speaker at the Math Conference in Bangkok, Thailand , March 2008, "On the total graph of a commutative ring."

- (32) Forty -minutes invited speaker at the MATH Conference in Cairo November 2007, "Pseudoalmost valuation domains."
- (33) Fifty-Minutes invited speaker at the IPM (Institute for theoretical studies in Mathematics and Physics), Iran (November 2007), "On the total graph and zero-graph of Commutative Rings."
- (34) Twenty-minutes invited speaker for the Algebra Conference at the Univ. of Connecticut, USA(June, 2007), " The total graph of commutative rings."
- (35) Fifteen- minute speaker for the UAE-Math day, Eitisalet College, " Zero-divisor graphs(Recent results)," 2007.
- (36) Fifteen- minute speaker in a Math conference in Malaysia, " Girth and Parameter of zero-divisor graph," March, 2007
- (37) A Plenary speaker(50 minutes) at Qaboos Univ. (oman), " Zero-divisor graph of a commutative ring," Algebra workshop, Dec. 2006
- (38) Twenty-minute invited speaker at Algebra Workshop in Cortona, Italy, June 2006, "A General Theory for Prufer Domains."
- (39) A plenary speaker (50 minutes) in Algebra Workshop in March of 2006 at KFUPM (Saudi Arabia), " On phi-commutative rings."
- (40) Twenty-minute speaker in the Algebra Session at the UAE-MATH-DAY (Univ. of Sharjah), "Commutative rings with finitely many non-nilpotent atom", 2006.
- (41) Twenty-minute invited speaker at Algebra Conference in Cairo (Egypt), March, 2006, " Anderson-Mott Commutative rings."
- (42) Invited Speaker for the American Math. Society Special Session on Commutative Rings, In OCTOBER 2005, "Some finiteness conditions on the set of overring of phi-rings."
- (43) Invited Speaker for the American Math. Society Special Session on Commutative Rings, In Jan., 2006, " Anderson-Mott Commutative Rings." 3.
- (44) A plenary speaker (50 minutes) in Algebra Workshop in November of 2005 at Qaboos Univ. (Oman) , "On nonnil rings."
- (45) Invited Speaker, "On 2-absorbing ideals of commutative rings," Cortona, Italy (June, 2004).
- (46) A characterization of valuation domains via m-canonical ideals," presented in the AMS-Special Session on Commutative Rings in Baton Rouge, Louisiana, U. S. A., March 14 till March 17.
- (47) " On Nonnil Noetherian Rings," presented at the commutative ring conference

in Venice, Italy, during the month of June, 2002.

- (48) "On the complete integral closure of ϕ -pseudo-valuation rings," at Fez, Morocco, the fourth international conference on commutative rings.
- (49) " ϕ -chained rings and ϕ -pseudo-valuation rings," at Colloque, Deuxieme recontre internationale sur les polynomes a valeurs, au CIRM, Luminy, France, from May, 29, 2000 till June ,3, 2000.
- (50) "Root closure in rings," Special session on Commutative Rings, AMS-Meeting, Charlotte, North Carolina, U. S. A., Abstract of the American Math. Society, Vol. 20(1999), P. 23.
- (51) "Powerful ideals in integral domains," Special session on Commutative Rings, AMS-Meeting, Winston-Salem, North Carolina, U. S. A., Abstract of the American Math. Society, Vol. 19(1998), P. 447.
- (52) "On Pseudo-valuation rings," Abstract of the American Math. Society, Vol. 18(1997), P. 68
- (53) "On Abelian pi-regular rings," Abstract of the American Math. Society, Vol. 15 (1995), P. 63.
- (54) "On semicommutative rings," Abstract of the American Math. Society, Vol. 15 (1993),
- (55) "More on the perfection of polynomials over $GF(q)$," Abstract of the American Society, Vol. 19 (1988), P. 173.