Name **Ken W. Smith**
Title **Professor and Chair**
Department **Department of Mathematics and Statistics**
College **College of Arts and Sciences**

Degrees Earned

Ph.D. (Mathematics) Colorado State University, Fort Collins, Colorado, May 1985
M.S. (Mathematics) University of Illinois, Urbana, Illinois, May 1977
B.S. (Mathematics) Western Illinois University, Macomb, Illinois, May 1975

Professional Licensure and Certifications

NA

Peer-Review Publications and Artistic Performances/Exhibitions

Articles

K. W. Smith, "The Representation Theory of Tactical Configurations", *Congressus Numerantium*, v. 60, 1987, 151 - 162.

K. W. Smith, "Flag Algebras of a Symmetric Design", *Journal of Combinatorial Theory*, Series A, v. 48, no. 2, 1988, 209 - 228.

K. W. Smith, "Teaching Number Theory with ZBASIC", *Proceedings of the Second Annual Conference on Technology in Collegiate Mathematics*, 1989, 294 - 297.

K. W. Smith, "In Search of a (495, 39, 3) Difference Set", *Congressus Numerantium*, v. 73, 1990, 77 - 88.

B. Manvel, A. Meyerowitz, A. J. Schwenk, K. W. Smith, P. K. Stockmeyer, "Reconstruction of Sequences", *Discrete Mathematics*, v. 94, 1991, 209 - 219.

R. A. Liebler, K. W. Smith, "On difference sets in certain 2-groups", in Coding Theory, Design Theory, Group Theory: *Proceedings of the Marshall Hall Conference*, ed. by D. Jungnickel, John Wiley & Sons, 1993.

J. A. Davis, K. W. Smith, "A construction of difference sets in high exponent 2-groups", *Journal of Algebraic Combinatorics*, 1994.

K. W. Smith, "Nonabelian hadamard difference sets", *Journal of Combinatorial Theory*, Series A, v. 70, 1995, 144 - 156.

J. Iiams, R. Liebler, K. W. Smith, "Difference Sets in Nilpotent Groups with Large Frattini Quotient: Geometric Methods and (375, 34, 3)", *Proceedings of a Special Research Quarter at the Ohio State University, Spring 1993* (published by Walter de Gruyter, 1996.)

K. Mackenzie Fleming, K. W. Smith, "(27, 13, 6) designs with automorphisms of order 3", Proceedings of the Ninth Midwest Conference on Combinatorics, Cryptography and Computing, special edition *of Journal of Combinatorial Mathematics and Combinatorial Computing*, 1996.

K. Mackenzie Fleming, K. W. Smith, "An infinite family on nonembeddable quasi-residual designs", *Journal of Statistical Planning and Inference*, v. 73, 1998.

H. Fleischner. R. Molina, K. W. Smith, D. West, "The Two-Path Conjecture", *Electronic Journal of Combinatorics*, 2002.

M. McNally, R. Molina, K. W. Smith, "Characterizing Randomly P_k Decomposable Graphs for $k \leq 9$" , *Congressus Numerantium* 156, 2003, 211-221.

(In addition, I supervised the undergraduate research which led to the publication: Christine Berkesch, Jeff Ginn, Erin Haller, Erin Militzer. "A Survey of Relative Difference Sets", *Rose-Hulman Undergraduate Mathematics Journal*, v. 4, Fall 2003.)

S. Narayan, J. (Eustice) Russell, K. W. Smith, "The Subgraph Summability Number of a Biclique", *Congressus Numerantium* **171**, 2004, 3-11.

O. AbuGhneim, P. Becker, J. Mendez, K. W. Smith, "On Hadamard Difference Sets in groups of order $4p^2$", *Congressus Numerantium* 172, 2005, 97-121.
J. A. Davis, J. Jedwab and K.W. Smith, "Proof of the Barker array conjecture," *Proc. Amer. Math. Soc.*, 2006.
O. AbuGhneim, K. W. Smith, "Tightening Turyn's Bound for Hadamard Difference Sets", to appear in *Journal of Algebraic Combinatorics*, 2007.
O. AbuGhneim, K. W. Smith, "Nonabelian Groups with (96,20,4) Difference Sets," *Electronic Journal of Combinatorics*, R8 in Volume 14, January 3, 2007,

Books
(none)

Chapters
K. W. Smith, "Nonabelian difference sets", chapter IV.13 in *The CRC Handbook on Combinatorial Designs*, 1996.
D. Jungnickel, A. Pott, K. W. Smith, "Difference sets", a chapter in *The CRC Handbook on Combinatorial Designs*, (2^{nd} ed.) 2006.

Proceedings
S. Narayan, K. W. Smith, "The NSF REU at Central Michigan University", Proceedings of the AMS/NSA conference on Promoting Undergraduate Research in Mathematics, 2006.
S. Adams, J. Davis, N. Eugene, K. Hoke, S. Narayan, K. W. Smith, "The Long-term Undergraduate Research (LURE) Model", Proceedings of the AMS/NSA conference on Promoting Undergraduate Research in Mathematics, 2006.,

Artistic Performances
NA

Artistic Exhibitions
NA

Research Monographs and Technical Reports
(none)

Funded External Grants
* Co-PI NSF MCTP grant, approx. $1,500,000, 2007-2011 (This grant, on "Longterm Undergraduate Research Experiences", is a collaborative project with CMU, the University of Richmond, Coppin State University and Olin College.)
* Co-PI NSF-REU grant, approx. $185,000 (with Sivaram Narayan), 2006-2008.
* Participant in NSF grant, $1,065,000 (PI: Doug Lapp & Azita Manouchehri), 2005-2009.
* Co-PI REU grant for $165,000 from the NSF (with Sivaram Narayan), 2003-2005.
* Received SUMMA seed grant of $5,000 for minority intervention in mathematics, 1996.
* Received NSA grant of $17,700, summer 1995, for research on nonabelian difference sets.

Peer-Review Presentations/Posters

Work or Professional Experiences
* Senior Cryptologist, National Security Agency, 1990-91
* Supervisor, Director's Summer Program, National Security Agency, 1993
* Member, American Mathematics Society

* Associate Fellow, Institute of Combinatorics and its Applications
* Member, Mathematical Association of America
* Member, National Council of Teachers of Mathematics
* Member, Association of Mathematics Teacher Educators

Honors and Awards

Central Michigan University Research Professor, Spring 2000.

Other Competencies

Regular contributor to the *Mathematical Reviews*. Referee for the *Journal of Combinatorial Mathematics and Combinatorial Computing*, the *Journal of Combinatorial Designs*. the *Journal of Designs, Codes and Cryptography* and other journals in combinatorics.