

{tag}

{/tag}

International Journal of Computer Applications  
© 2014 by IJCA Journal

Volume 100 - Number 11

Year of Publication: 2014

Authors:

Swapnil T. Patil

Pratap N. Shinde

10.5120/17568-8239

{bibtex}pxc3898239.bib{/bibtex}

## Abstract

This paper discusses the fundamental concepts behind the real and complex orthogonal designs for space-time block coding used in wireless communication systems. Generalized real orthogonal design and complex orthogonal designs are discussed in this paper. Also a brief survey of existing orthogonal designs for space-time block coding is put forward in this paper.

## References

### ences

- Weifeng Su and Xiang-Gen Xia. 2003. "On Space-Time Block Codes from Complex Orthogonal Designs", *Wireless Personal Communications* 25: 1–26.
- A. V. Geramita and J. Seberry. 1979. *Orthogonal Designs, Quadratic Forms and Hadamard Matrices*. Lecture Notes in Pure and Applied Mathematics, Vol. 43, Marcel Dekker: New York and Basel.
- V. Tarokh, H. Jafarkhani and A. R. Calderbank. 1999. "Space-time Block Codes from Orthogonal Designs", *IEEE Trans. Inform. Theory*, Vol. 45, No. 5, pp. 1456–1467.
- G. Ganesan and P. Stoica. 2001. "Space-time Block Codes: A Maximum SNR

Approach", IEEE Trans. Inform. Theory, Vol. 47, No. 4, pp. 1650–1656.

- Seberry, J. , Spence, S. A. , & Wysocki, T. A. 2005. A construction technique for generalized complex orthogonal designs and applications to wireless communications. Linear algebra and its applications, 405, 163-176.
- T. Josefiak. 1976. "Realization of Hurwitz–Radon Matrices", Queen's Papers in Pure and Applied Mathematics, No. 36, pp. 346–351.
- W. Wolfe. 1976. "Amicable Orthogonal Designs – Existence", Canad. J. Math. , Vol. 28, pp. 1006–1020.
- Liang Xian and Huaping Liu. 2005. "Rate-One Space–Time Block Codes With Full Diversity", IEEE Trans. Commun, Vol. 53, No. 12.
- S. Alamouti. 1998. "A Simple Transmit Diversity Technique for Wireless Communications", IEEE J. Select. Areas Commun. , Vol. 16, No. 8, pp. 1451–1458.
- Su, W. , & Xia, X. G. 2003. Two generalized complex orthogonal space-time block codes of rates 7/11 and 3/5 for 5 and 6 transmit antennas. Information Theory, IEEE Transactions on, 49(1), 313-316.
- O. Tirkkonen and A. Hottinen. 2002 "Square-matrix Embeddable Space-time Block Codes for Complex Signal Constellations", IEEE Trans. Inform. Theory, Vol. 48, No. 2, pp. 1122–1126.
- B. M. Hochwald, T. L. Marzetta and C. B. Papadias. 2001 "A Transmitter Diversity Scheme for Wideband CDMA Systems Based on Space-time Spreading", IEEE J. Select. Areas Commun. , Vol. 19, No. 1, pp. 48–60.

### Index Terms

Computer Science

Information Sciences

### Keywords

Space-time block coding real orthogonal design generalized complex orthogonal design.