Publications on Asynchronous Circuit Theory

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Books

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Contributions to Books

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2. J. A. Brzozowski and R. Negulescu, "Duality for Three: Symmetry in Process Spaces," pp. 1–14 in *Theory Is Forever,* Lecture Notes in Computer Science, vol. 3113, J. Karhumäki, H. Maurer, G. Păun, and G. Rozenberg, eds., Springer, Berlin, 2004.

3. J. A. Brzozowski, Z. Ésik, and Y. Iland, "Algebras for Hazard Detection," pp. 3–24 in *Beyond Two - Theory and Applications of Multiple-Valued Logic,* M. Fitting, and E. Orłowska, eds., Physica-Verlag, Heidelberg, 2003.

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3. M. Gheorghiu and J. A. Brzozowski, "Simulation of Feedback-Free Circuits in the Algebra of Transients," *Int. J. Foundations of Computer Science,* vol. 14, no. 6, pp. 1033–1054, December 2003.

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9. J. A. Brzozowski, "Some Applications of Ternary Algebras," *Publicationes Mathematicae (Debrecen),* vol. 54, suppl., pp. 583–589, 1999.

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2. M. Gheorghiu and J. A. Brzozowski, "Feedback-Free Circuits in the Algebra of Transients," *Implementation and Application of Automata,* J.-M. Champarnaud and D. Morel, eds., (revised papers) CIAA 2002, Tours, France, July 3–5, 2002, Lecture Notes in Computer Science, vol. 2608, Springer, Berlin, pp. 106–116, 2003.

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Other Articles

1. J. A. Brzozowski and C-J. H. Seger, "Advances in Asynchronous Circuit Theory - Part II: Bounded Inertial Delay Models, MOS Circuits, Design Techniques," *Bulletin of the European Association for Theoretical Computer Science,* no. 43, pp. 199–263, February 1991.

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Ph.D. Theses Supervised

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2. C-J. H. Seger, *Models and Algorithms for Race Analysis in Asynchronous Circuits,* PhD Thesis, Department of Computer Science, University of Waterloo, Waterloo, ON, Canada, May 1988.

3. S. Singh, *Design of Asynchronous Sequential Circuits with Asynchronous Unit Delays,* Ph.D. Thesis, Department of Electrical Engineering, University of Ottawa, Ottawa, ON, Canada, November 1968.

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3. H. Zhang, *Delay-Insensitive Networks,* MMath Thesis, Department of Computer Science, University of Waterloo, June 1997.

4. C.-J. H. Seger, *Ternary Simulation of Asynchronous Gate Networks,* MMath Thesis, Department of Computer Science, University of Waterloo, December 1985.

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However, synchronous circuit testing techniques cannot be used on asynchronous circuits directly, especially self-. NCL-EECE-MSD-TR-2003-100. 6.Â The following papers, based on the work presented in this thesis, have been published or submitted for publication: â€¢ An Asynchronous Communication Mechanism using self-timed circuits [Xia. 1999a] (6th UK Asynchronous Forum); NCL-EECE-MSD-TR-2003-100. Asynchronous sequential circuits do not use clock signals as synchronous circuits do. Instead, the circuit is driven by the pulses of the inputs which means the state of the circuit changes when the inputs change. Also, they donâ€™t use clock pulses.Â Fewer people are trained in this style compared to synchronous design. Difficult to test and debug. Their output is uncertain. The performance of asynchronous circuits may be reduced in architectures that have a complex data path. Lack of dedicated, asynchronous design-focused commercial EDA tools. References â€“ Asynchronous circuit â€“ Wikipedia Asynchronous Sequential Circuits â€“ viden. Attention reader! Donâ€™t stop learning now. Read about Asynchronous Counters (Sequential Circuits) in our free Electronics Textbook.Â Since it would be desirable to have a circuit that could count forward and not just backward, it would be worthwhile to examine a forward count sequence again and look for more patterns that might indicate how to build such a circuit. Since we know that binary count sequences follow a pattern of octave (factor of 2) frequency division, and that J-K flip-flop multivibrators set up for the â€œtoggleâ€ mode are capable of performing this type of frequency division, we can envision a circuit made up of several J-K flip-flops, cascaded to produce four bits of output. ii ASYNCHRONOUS CIRCUIT DESIGN. Foreword. iii. This material in this booklet originally appeared as: J. SparsÃ¸. Asynchronous circuit design - a tutorial. Chaptes 1-8 in J. SparsÃ¸ and S. Furber (eds.), Principles of asynchronous cir-cuit design - A systems perspective. Kluwer Academic Publishers, 2001.Â Since its publication in 2001 the material has been used in courses taught at a number of universities including: The University of Manchester (UK), Technion (Israel), FORTH (Greece). It has also been used at a summer school in Grenoble in 2003 and a winter school at Cambridge University in 2005; both organized by the ACiD-WG network of excellence.