

**CiE Athens 2008**

**Applied Computability: A European Perspective**

**J V Tucker**  
**Swansea University**

**General Reflections on Models**

J V Tucker and J I Zucker, *Abstract versus concrete computability: The case of countable algebras*, in V Stoltenberg-Hansen and J Vaananen (eds), **Logic Colloquium 03**, Proceedings of Annual European Summer Meeting of Association for Symbolic Logic, Helsinki, 2003, Lecture Notes in Logic, Association for Symbolic Logic, 2006, 377-408.

**Applications to Algebra**

V Stoltenberg-Hansen and J V Tucker, *Computable rings and fields*, in E Griffor (ed.), **Handbook of Computability Theory**, Elsevier, 1999, pp. 363-447.

V Stoltenberg-Hansen and J V Tucker, *Computable and continuous partial homomorphisms on metric partial algebras*, **Bulletin of Symbolic Logic**, 9, (2003), 299-334.

**Applications to Data Types**

V Stoltenberg-Hansen and J V Tucker, *Effective algebras*, in S Abramsky, D Gabbay and T Maibaum (eds.), **Handbook of Logic in Computer Science. Volume IV: Semantic Modelling**, Oxford University Press, 1995, pp. 357-526.

**Applications to Programming Models**

J V Tucker and J I Zucker, *Computable functions and semicomputable sets on many sorted algebras*, in S Abramsky, D Gabbay and T Maibaum (eds.), **Handbook of Logic in Computer Science. Volume V: Logical and Algebraic Methods**, Oxford University Press, 2000, pp. 317-523.

J V Tucker and J I Zucker, *Origins of our theory of computation on abstract data types at the Mathematical Centre, Amsterdam, 1979-80*, in F de Boer, M van der Heijden, P Klint, J Rutten (eds), **Liber Amicorum: Jaco de Bakker**, CWI Amsterdam, 2002, 197-221.

## Applications to Continuous Data Types

J V Tucker and J I Zucker, *Abstract computability and algebraic specification*, **ACM Transactions on Computational Logic**, 3 (2002), 279-333.

J V Tucker and J I Zucker, *Computable total functions on metric algebras, universal algebraic specifications and dynamical systems*, **Journal of Algebraic and Logic Programming**, 62 (2005) 71-108.

J V Tucker and J I Zucker, *Abstract versus concrete models of computation on partial metric algebras*, **ACM Transactions on Computational Logic**, 5 (4) (2004) 611-668.

## Applications to Physics

E J Beggs and J V Tucker, *Computations via experiments with kinematic systems*, Report.

E J Beggs and J V Tucker, *Embedding infinitely parallel computation in Newtonian kinematics*, **Applied Mathematics and Computation**, 178 (2006) 25-43.

E J Beggs and J V Tucker, *Can Newtonian systems, bounded in space, time, mass and energy compute all functions?*, **Theoretical Computer Science**, 371 (2007) 4-19.

J V Tucker and J I Zucker, *Computability of analogue networks*, **Theoretical Computer Science**, 371 (2007) 115-146.

E J Beggs and J V Tucker, *Experimental computation of real numbers by Newtonian machines*, **Proceedings of the Royal Society Series A**, 463 (2007) 1541-1561.

E J Beggs, J F Costa, B Loff, and J V Tucker, *Computational complexity with experiments as oracles*, **Proceedings of the Royal Society Series A**, 2008, in press.

E J Beggs, J F Costa, B Loff, and J V Tucker, *On the complexity of measurement in Classical Physics*, in **Theory and Applications of Models of Computation**, Lecture Notes in Computer Science, vol 4978, Springer, 2008, 20 - 30.

E J Beggs and J V Tucker, *Programming experimental procedures for Newtonian kinematic machines*, in Arnold Beckmann Costas Dimitracopoulos, Benedikt Löwe (Eds.), **Logic and Theory of Algorithms 4th Conference on Computability in Europe, CiE 2008, Athens, Greece, June 15-20, 2008 Proceedings**, Lecture Notes in Computer Science, Volume 5028, Springer-Verlag, 2008, 52-66.

E J Beggs, J F Costa, B Loff and J V Tucker, *Oracles and advice as measurements*, *Unconventional Computing 2008*, Proceedings, Springer Lecture Notes in Computer Science, Volume ?, Springer-Verlag, 2008, to appear.

E J Beggs and J V Tucker, *Computations via Newtonian and relativistic kinematic systems*, **Applied Mathematics and Computation**, submitted.

