

David Bryan Carpenter

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Education

Ph D. in Physics, University of London (1979-1983).
B.Sc. in Physics, University of London (1976-1979).

Professional Experience

1996– Research Scientist, NPAC, Syracuse University **1994–1995** Programmer, High Performance Computing Centre, Southampton, UK. **1989–93** Research Fellow in Department of Electronics and Computer Science and Department of Physics, Southampton, UK. **1989** Employed at “Transputer Technology Solutions”, Southampton, UK. **1985–1988** Research Fellow in Department of Physics, Southampton, UK. **1985** Royal Society Overseas Fellowship at DESY, Hamburg. **1983–1984** Research Fellow in Theoretical Physics Department, Edinburgh University.

Select List of Publications:

- [1] Bryan Carpenter, Geoffrey Fox, Sung Hoon Ko and Sang Lim “Object Serialization for Marshalling Data in a Java Interface to MPI”, *ACM 1999 Java Grande Conference*, ACM Press 1999.
- [2] Mark Baker, Bryan Carpenter, Geoffrey Fox, Sung Hoon Ko and Sang Lim, “mpiJava: An Object-oriented Java Interface to MPI”, *Intl. Workshop on Java for Parallel and Distributed Computing, IPPS/SPDP '99*, San Juan, Puerto Rico, April 1999.
- [3] Bryan Carpenter, Guansong Zhang, Geoffrey Fox, Xiaoming Li, Xinying Li and Yuhong Wen, “Towards a Java environment for SPMD programming”, *4th International Europar Conference*, Springer, 1998.
- [4] Guansong Zhang, Bryan Carpenter and Geoffrey Fox and Xinying Li and Yuhong Wen, “The HPspmd Model and its Java Binding.”, chapter in book, R. Buyya ed, *High Performance Cluster Computing, Vol 2*, Prentice Hall 1999.
- [5] G. Zhang, B. Carpenter, G. Fox, X. Li, X. Li and Y. Wen, “PCRC-based HPF Compilation”, *10th Int’l Workshop on Languages and Compilers for Parallel Computing*, Lecture Notes in Computer Science, 1336, Springer 1997.
- [6] B. Carpenter, Y.-J. Chang, G. Fox, D. Leskiw and X. Li, “Experiments with *HP Java*”, *Concurrency: Practice and Experience*, Vol 9, num 9 (1997), p633.
- [7] J. Merlin, B. Carpenter and Tony Hey, “shpf: a Subset High Performance Fortran compilation system”, *Fortran Journal*, (1996), pp 2-6.
- [8] D.B. Carpenter, “Adlib: A Distributed Array Library to Support HPF Translation”, *5th Workshop on Compilers on Parallel Computer*, Malaga 1995.

- [9] D.B. Carpenter and H. Glaser, “Some Lattice-Based Scientific Problems, expressed in Haskell”, *Journal of Functional Programming*, 6(3):419-443, May 1996.
- [10] As. Abada, C.R. Allton, Ph. Boucard, D.B. Carpenter, M. Crisafulli, S. Güsken, P. Hernadez, V. Lubicz, G. Martinelli, O. Pène, C.T. Sachrajda, K. Schilling, G. Siegert and R. Sommer, “Semi-leptonic Decays of Heavy Flavours on a Fine-grained Lattice”, *Nuclear Physics B*416 (1994) p675.

Summary of Interests:

Carpenter has worked in parallel computing since 1985, when he was one of the first scientists to exploit the Inmos transputer for simulations of physical systems. Working at the University of Southampton, UK he became involved with design of libraries to support parallel computing. In a fruitful collaboration with John Merlin, then also at Southampton, he was codeveloper of the *shpf* system, an early implementation of subset HPF. This work produced the first implementation of the Adlib runtime library. After moving to Syracuse in 1996, Carpenter worked in the PCRC project. As part of this work the Adlib library was substantially redesigned to meet the requirements of a new HPF compiler, and reimplemented. Eventually it was delivered as the NPAC PCRC runtime kernel. Work on C++ interfaces to Adlib was a formative influence in the ongoing work on HPJava and HPspmd. Carpenter’s recent research has focussed around the HPspmd project, which is developing translators and other support for library-based data-parallel programming, using Java and other languages. The mpiJava software for message-passing parallel programming was a spin-off from this project.

Ph.D. Advisor

Elliot Leader