



## Workshop: Using the NAG Numerical Libraries on Multicore Systems

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Multicore is the roadmap for all future processors, and provides the opportunity for high performance through the use of multiple cores working together in parallel. However, software must be parallelized to make use of the multiple cores. This workshop introduces the NAG Numerical Library and describes the way it has been optimized for multicore systems.

The NAG Numerical Library underpins thousands of applications used around the world in fields such as finance, science, engineering, academia, and research. Since its first release more than thirty-five years ago, it has been widely trusted because of its unrivalled quality, reliability and portability, having been implemented on a variety of platforms ranging from PC workstations to a cluster of the world's largest supercomputers.

By way of justification, the workshop will begin with some descriptions of the pitfalls that await the unwary in numerical computation, before introducing the NAG Numerical Library as a comprehensive collection of mathematical and statistical algorithms for programmers and application developers. The routines are accessible from a number of environments, including standard languages such as Fortran, C and C++, as well as packages like MATLAB, Maple and Excel, and provide a straightforward way to incorporate powerful, reliable and accurate algorithms into developers' applications. The workshop will highlight those routines which have been specially developed and tuned for use on multicore systems and other shared memory architectures. Several examples of the Library's functionality will be presented, including the following:

- Finding the roots of an equation
- Quadrature
- Interpolation
- Curve & surface fitting
- Minimizing or maximizing a function
- Simple calculations on statistical data
- Multivariate methods
- Random numbers
- Time series analysis

The workshop will include a number of hands-on exercises, and a Q&A session with the lecturer.