

DNP08-2008-000528

Abstract for an Invited Paper
for the DNP08 Meeting of
the American Physical Society

Petascale Architectures for Nuclear Physics Computation

JAMES SEXTON, IBM T. J. Watson Research Center

The next few years will be a time of considerable innovation in computer architectures as efforts expand to develop petascale and exascale systems for all computational disciplines. On the top 500 list, the first sustained petaflop system has now been delivered at Los Alamos National Laboratory. The technology challenges to the delivery of sustained petaflop computational capability are both significant and surprising. Power, memory capacity, data management, and reliability are emerging as critical system issues for the production use of petascale systems. High performance software libraries and middleware environments are now essential to enable application development and deployment for production computational use. This paper presents the current status of systems architectures for petascale computing, and discusses the approaches which are emerging to deliver effective, productive petascale solutions.