

Technical Proposal — NLCS 2007

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[This proposal is limited to 10 pages. Please remove all [bracketed] instructions below before submitting your proposal.]

[Proposal Title]

Abstract

[Provide a concise abstract (150 words or less) of the proposed project.]

1. Research Objectives

[Describe the proposed research, including its goals and objectives, and the theoretical and computational methods it employs.]

2. Significance of Research

[Describe the scientific or engineering impact that you expect to achieve from this NLCS award. Also describe the significance of this work in the context of competing work in your discipline.]

3. Computational Approach

a. Application Characteristics

[Fill in the “Application Description” column of the following table.]

Characteristic	Application Description
Primary codes (names and languages)	
Libraries and other software required	e.g., BLAS, LAPACK, etc.
Underlying mathematical formulation(s)	e.g., ODE, PDE
Algorithms and numerical techniques	e.g., finite element, iterative solver
Parallel programming model used	e.g., MPI, OpenMP, hybrid

b. Schedule

[Describe the project’s 12-month schedule, including transferring codes and inputting data onto the NLCS system, scaling and testing codes, conducting the primary computations and data analysis, and transferring results from the NLCS system.]

c. Computational Techniques and Scalability

[For each primary code identified in the table above, describe the computational techniques used and the NLCS resources (processors, memory, interconnect) needed. Provide evidence that these codes will make effective use of the NLCS system to perform leadership-scale computations. Comment specifically on code scalability. {For details on the configuration and features of the NLCS system (the 2,048-processor shared memory environment on Columbia), see http://www.nas.nasa.gov/Resources/Systems/columbia_details.html. Note that NASA reserves the right to end NLCS allocations for those projects that do not demonstrate sufficient code scalability or resource use during the 12-month award period.}]

d. Data and Networking

[Describe the project's data storage and transfer requirements, both within the NLCS facility and requirements to move large data sets on and off the NLCS system.]

e. Advanced Support

[Describe any advanced technical support desired from the NLCS facility, beyond general helpdesk support and assisting with application porting. Advanced support might include assistance with application scaling and optimization, large-scale data analysis and visualization, or system and networking customization. These requests will be handled to the extent that staffing is available, and cannot be a requirement for project success.]

4. References

[Provide a list of references/citations for this proposal.]