

KAUST Supercomputing Laboratory (KSL)

Project Proposal (PP)

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| Project Title |  |
| Principal Investigator (PI) |  |
| PI Signature |  |
| Date of Proposal |  |

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| --- | --- |
| Project Type | 🞏 Development/Pre-Production 🞏 Production |
|  | 🞏 New 🞏 Extension Project ID: k\_\_\_\_ |
| System | 🞏 Shaheen II |
| Core Hours Requested |  |

**Available System:**

Shaheen II Supercomputer : 36-cabinets Cray XC40 system, comprising 6174 nodes, each with 32 Haswell cores and 128GB of memory, for a total of 197,568 cores along with 17.4 PB of Luster storage with a maximum data transfer bandwidth of 0.5 TB/s

Submission

Please send a scanned copy of the completed Project Proposal to:

[Projects@hpc.kaust.edu.sa](mailto:Projects@hpc.kaust.edu.sa)

Definitions:

* Development/Pre-production Project - A development project provides access for system familiarisation, code porting, performance assessment, and other pre-production work. Development/Pre-production Projects will not be allocated significant computing resources.
* Production Project - A production project requires that applications have been ported and tuned, and that performance assessments have been completed. Production Projects will be allocated significant computing resources.

**Terms and Conditions regarding Research Publications**

Whenever the results of research conducted on the HPC systems at KAUST are published, or the research involved personnel from KAUST Supercomputing Laboratory (KSL), CBRC, Research Computing, Principal Investigators (PIs) are required to acknowledge the usage of the HPC systems at KAUST and/or the involvement of KSL personnel in their research in their publications. For example, the following statement could be used: “For computer time, this research used the resources of the Supercomputing Laboratory at King Abdullah University of Science & Technology (KAUST) in Thuwal, Saudi Arabia.

**Principal Investigator (PI):**

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| Name: |  |
| Email: |  |
| Tel: |  |
| Organisation: |  |
| Department: |  |
| Organisation Address: |  |

# Additional Investigators

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| --- | --- | --- |
| 1 | Name: |  |
| Email: |  |
| Tel: |  |
| Organisation: |  |
| Org Address: |  |
| 2 | Name: |  |
| Email: |  |
| Tel: |  |
| Organisation: |  |
| Org Address: |  |

# Collaborators (External):

|  |  |  |
| --- | --- | --- |
| 1 | Name: |  |
| Email: |  |
| Tel: |  |
| Organisation: |  |
| Org Address: |  |
| 2 | Name: |  |
| Email: |  |
| Tel: |  |
| Organisation: |  |
| Org Address: |  |

# Project Description:

Please describe the activities proposed, including current state of art, research work proposed, *expected milestones, and deliverables, as well as a summary description in the box below, and include the scientific field of the investigation as part of the description.*

***Note****: Citations of the scientific literature are encouraged in order to show where the proposed simulations stand with respect to the ‘state of the practice’ in terms of such factors as model generality, resolution, and advantages of simulation versus experiment and theory.*

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# Project Background:

*Please describe the background to this project, including (i) what is the existing work in this area; (ii) what is the novelty of the proposed project; (iii) why is the proposed work significant; (iv) what is the common methodology to tackle similar problems; (v) does the proposed project follow a similar/different methodology; (vi) what are the expected outcomes of this project*

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# Scientific Impact:

*Please detail the expected scientific impact of the proposed research.*

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# List of Publications:

*Please provide a list of publications that have appeared archivally or been accepted for journals, conference proceedings, posters, etc., resulting from KAUST HPC resources from any previous allocations granted. If more convenient, append to this proposal an existing list of publications, with those attributed to past KAUST HPC allocations of PIs on this proposal marked.*

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# In Preparation and Future Publications:

*To enhance the review committee's understanding of the potential impact of your computations, please list a paper or papers that you contemplate arising from this research. Please mention a tentative title, a potential venue, and a list of likely co-authors from inside and outside of KAUST. This information will not be circulated beyond the committee in any form and is understood not to constitute a part of any core-hour award agreement, given the unpredictability of the fruitful directions of research.*

*Please remember that all papers benefiting from KSL resources must make an attribution to KSL.*

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# Codes & Libraries:

* *Please provide the following information for each code or library that will be used.*
* *If needed, please include the same information for any other codes or libraries to be used in ‘Additional Information’ at the end of this proposal, or attached on a separate sheet.*

|  |  |  |
| --- | --- | --- |
| 1 | Name of Code/Library: |  |
| Ownership / Licensing: |  |
| URL (*for Open Source codes*) |  |
| Function: |  |
| 2 | Name of Code/Library: |  |
| Ownership / Licensing: |  |
| URL (*for Open Source codes*) |  |
| Function: |  |

# Code Readiness:

# *Please provide details of code performance and scalability achieved, and note any known issues that might impact production execution*.

* *If possible, please provide a simple table/graph showing the required ‘wall time’ versus the number of cores used.*

# *If needed, please include the same information for any other codes or libraries to be used in ‘Additional Information’ at the end of this proposal, or attached on a separate sheet.*

|  |  |  |
| --- | --- | --- |
| 1 | Name of Code/Library: |  |
| Scalability: |  |
| Known Issues: |  |
| 2 | Name of Code/Library: |  |
| Scalability: |  |
| Known Issues: |  |

# Resource Requirements:

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| Compute Resource | Requirement (core hours) | Duration (in Days) |
| Shaheen II |  |  |

# Resource Requirement Justification:

*Please detail how the above requirements were calculated.*

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# Typical problem description:

*Please describe typical problem size and duration e.g. typical job will use 100 nodes for 2 hours.*

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***Notes:***

1. Jobs are jobs submitted to the systems via the SLURM Job Scheduler that are scheduled and run as soon as possible.
2. The charging is allocated in ‘core-hours’, i.e. one core for one hour.

# 72hours Queue request justification:

*Please describe the justification of using the 72hours queue( Applications, typical wall-clock time, the number of nodes, checkpointing mechanism….)*

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***Notes:***

1. Jobs are jobs submitted to the systems via the SLURM Job Scheduler that are scheduled and run as soon as possible.
2. The charging is allocated in ‘core-hours’, i.e. one core for one hour.

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| Storage Resource Requirements: | | Requirement (in TB) | Duration (in Days) |
| Requirements: | Disk |  |  |
| Tape |  |  |

***Notes:***

1. Policy states that all project data stored on disk will be removed 6 months after the completion of the project.
2. Policy states that all project data stored on the tape archive will be removed upon the completion of the project *unless* special arrangements have been requested and granted.

**Other Resource Requirements:**

e.g. prep time required to characterise scalability; any human/machine interaction required during the computation, etc.**:**

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# Consultancy Support Required

*Please indicate the number of man-days and type of any support required from staff (e.g. 0.2FTE for 3 months), which can include:*

* *Code development*
* *Code porting*
* *Code performance tuning*
* *Algorithm development*
* *Pre- and Post-Processing code development*
* *Data analysis and visualisation support*
* *Research program development*
* *Project management support*

*Please note that KAUST may be entitled to a share in the Intellectual Property Rights to any research results produced as a result of support provided by KAUST.*

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# Confidentiality and Legal Issues:

Please provide details of any potential confidentiality or legal issues, e.g.*:*

* *Is the project proposal confidential? If so, how? Does it contain human data?*
* *Is the data confidential? If so, how?*
* *Are any other aspects of the project confidential? If so, how?*
* *If the project is successful, could it be the subject of publicity?*
* *Do any third parties have ownership of any codes or data being used?*

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# Other Information in Support of the Proposal:

*Please include any other considerations you feel would support of this proposal, e.g.:*

* *Would the proposed project have any social impact?*
* *Would the proposed project have potential for generating good publicity for KAUST and/or partner organisations?*
* *Would the proposed project develop any useful tools that might be shared with others inside or outside of KAUST?*

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# Potential reviewers:

*Proposed production projects undergo a two-stage review process. The first stage, a Computational Readiness Review, is performed internally by KSL staff members possessing expertise in the application code proposed for execution, on the basis of applicant’s documentation under “Code Readiness” above or on the basis of earlier known uses of the code. The second stage is a Scientific Readiness Review, performed by scientific peers in the discipline of the proposed project, at KAUST or externally. The selection of reviewers is the responsibility of the RCAC and KSL staff; however, suggestions for reviewers are welcome. Reviewers should not be direct collaborators for the purpose of this proposal. Your reference to them will not be disclosed in the process of seeking a review.*

* *If any, please name some reviewers you know of at KAUST who could adequately review the scientific merit of this proposal.*

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* *If you wish, please name some reviewers external to KAUST who could adequately review the scientific merit of this proposal. Please provide a web pointer (including contact) to the professional profiles of external candidate reviewers. These should be individuals with whom you have not collaborated in research or a proposal for funding or computing time during the past 24 months.*

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# Reviewers to exclude:

*Sometimes proposers wish to exclude certain reviewers who are working closely to the area of the proposal. Such wishes will be respected in the Scientific Readiness Review process.*

* *If you wish, feel free to name, potential peer reviewers who should not see this proposal?*

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**Curriculum Vitae of Principal Investigator(s)**

*To aid reviewers in their scientific evaluation, please attach a 1-page (or at most 2-page) C.V., updated to within the past year, for each principal investigator. For KAUST-based investigators, this typically would be the C.V. that is kept on file for KAUST Office of Sponsored Research purposes.*

**☐ attached**

**Additional Information**

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**For RCAC Office Use Only:**

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| Date of Review: |  | |
| Project Review Board Members: |  | |
| Result: | *Approved* | *Not Approved* |

**Resources Allocated:**

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| System | **Volume** | **Duration** |
| Shaheen II |  |  |
| Disk (TB) |  |  |
| Tape (TB) |  |  |

**Services Allocated:**

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| --- | --- | --- |
| Service Description | **Volume (Man-Days)** | **Duration** |
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**Comments/Notes:**

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