This manuscript has been authored by Sandia Corporation under Contract No. DE-AC04-94AL85000 with the U.S. Department of Energy. The United States Government retains and the publisher, by accepting the article for publication, acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this manuscript, or allow others to do so, for United States Government purposes.

# IEEE COPYRIGHT AND CONSENT FORM

To ensure uniformity of treatment among all contributors, other forms may not be substituted for this form, nor may any wording of the form be changed. This form is intended for original material submitted to the IEEE and must accompany any such material in order to be published by the IEEE. Please read the form carefully and keep a copy for your files.

TITLE OF PAPER/ARTICLE/REPORT, INCLUDING ALL CONTENT IN ANY FORM, FORMAT, OR MEDIA (hereinafter, "the Work"): Oh, \$#@! Exascale! The Effect of Emerging Architectures on Scientific Discovery

**COMPLETE LIST OF AUTHORS:** Kenneth Moreland

IEEE PUBLICATION TITLE (Journal, Magazine, Conference, Book): 2012 SC Companion (SCC 2012)

#### Copyright Transfer

1. The undersigned hereby assigns to The Institute of Electrical and Electronics Engineers, Incorporated (the "IEEE") all rights under copyright that may exist in and to: (a) the above Work, including any revised or expanded derivative works submitted to the IEEE by the undersigned based on the Work; and (b) any associated written or multimedia components or other enhancements accompanying the Work.

#### Consent and Release

- 2. In the event the undersigned makes a presentation based upon the Work at a conference hosted or sponsored in whole or in part by the IEEE, the undersigned in consideration for his/her participation in the conference, hereby grants the IEEE the unlimited, worldwide, irrevocable permission to use, distribute, publish, license, exhibit, record, digitize, broadcast, reproduce and archive, in any format or medium, whether now known or hereafter developed: (a) his/her presentation and comments at the conference; (b) any written materials or multimedia files used in connection with his/her presentation; and (c) any recorded interviews of him/her (collectively, the "Presentation"). The permission granted includes the transcription and reproduction of the Presentation for inclusion in products sold or distributed by IEEE and live or recorded broadcast of the Presentation during or after the conference.
- 3. In connection with the permission granted in Section 2, the undersigned hereby grants IEEE the unlimited, worldwide, irrevocable right to use his/her name, picture, likeness, voice and biographical information as part of the advertisement, distribution and sale of products incorporating the Work or Presentation, and releases IEEE from any claim based on right of privacy or publicity.
- 4. The undersigned hereby represents that the Work and Presentation (collectively, the "Materials") are original and that he/she is the author of the Materials. To the extent the Materials incorporate text passages, figures, data or other material from the works of others, the undersigned has obtained any necessary permissions. Where necessary, the undersigned has obtained all third party permissions and consents to grant the license above and has provided copies of such permissions and consents to

☐ Please check this box if you do not wish to have video/audio recordings made of your conference presentation.	
See reverse side for Retained Rights/Terms and Conditions, and Author Responsibilities.	

(3)

General Terms
the undersigned represents that he/she has the power and authority to make and execute this assignment.  the undersigned agrees to indemnify and hold harmless the IEEE from any damage or expense that may arise in the event of a breach of any of the warranties set forth above.  the event the above work is not accepted and published by the IEEE or is withdrawn by the author(s) before acceptance by the IEEE, the foregoing copyright transfer shall be destroyed.  The property of the warranties set forth above.  The property of the warranties set forth above.  The event the above work is not accepted and published by the IEEE or is withdrawn by the author(s) before acceptance by the IEEE, the foregoing copyright transfer shall be destroyed.  The property of the warranties set forth above.  The property of the warranties are property of the warranties set forth above.  The property of the warranties are property of the warra
U.S. Government Employee Certification (where applicable)
This will certify that all authors of the Work are U.S. government employees and prepared the Work on a subject within the scope of their official duties. As such, the Work is not subject to U.S. copyright protection.
(2)
Authorized Signature Date
(Authors who are U.S. government employees should also sign signature line (1) above to enable the IEEE to claim and protect its copyright in international jurisdictions.)
Crown Copyright Certification (where applicable)
This will certify that all authors of the Work are employees of the British or British Commonwealth Government and prepared the Work in connection with their official duties. As such, the Work is subject to Crown Copyright and is not assigned to the IEEE as set forth in the first sentence of the Copyright Transfer Section above. The undersigned acknowledges, however, that the IEEE has the right to publish, distribute and reprint the Work in all forms and media.

**Authorized Signature** Date

(Authors who are British or British Commonwealth Government employees should also sign line (1) above to indicate their acceptance of all terms other than the copyright transfer.) rev. 060309

# **IEEE COPYRIGHT FORM** (continued)

#### RETAINED RIGHTS/TERMS AND CONDITIONS

- 1. Authors/employers retain all proprietary rights in any process, procedure, or article of manufacture described in the Work.
- 2. Authors/employers may reproduce or authorize others to reproduce the Work, material extracted verbatim from the Work, or derivative works for the author's personal use or for company use, provided that the source and the IEEE copyright notice are indicated, the copies are not used in any way that implies IEEE endorsement of a product or service of any employer, and the copies themselves are not offered for sale.
- Authors/employers may make limited distribution of all or portions of the Work prior to publication if they inform the IEEE in advance of the nature and extent of such limited distribution.
- 4. In the case of a Work performed under a U.S. Government contract or grant, the IEEE recognizes that the U.S. Government has royalty-free permission to reproduce all or portions of the Work, and to authorize others to do so, for official U.S. Government purposes only, if the contract/grant so requires.
- 5. For all uses not covered by items 2, 3, and 4, authors/employers must request permission from the IEEE Intellectual Property Rights office to reproduce or authorize the reproduction of the Work or material extracted verbatim from the Work, including figures and tables.
- 6. Although authors are permitted to re-use all or portions of the Work in other works, this does not include granting third-party requests for reprinting, republishing, or other types of re-use. The IEEE Intellectual Property Rights office must handle all such third-party requests.

## INFORMATION FOR AUTHORS

## **Author Responsibilities**

The IEEE distributes its technical publications throughout the world and wants to ensure that the material submitted to its publications is properly available to the readership of those publications. Authors must ensure that their Work meets the requirements as stated in section 8.2.1 of the IEEE PSPB Operations Manual, including provisions covering originality, authorship, author responsibilities and author misconduct. More information on IEEE's publishing policies may be found at <a href="http://www.ieee.org/web/publications/pubtoolsandpolicyinfo/index.html">http://www.ieee.org/web/publications/pubtoolsandpolicyinfo/index.html</a>. Authors are advised especially of IEEE PSPB Operations Manual section 8.2.1.B12: "It is the responsibility of the authors, not the IEEE, to determine whether disclosure of their material requires the prior consent of other parties and, if so, to obtain it." Authors are also advised of IEEE PSPB Operations Manual section 8.1.1B: "Statements and opinions given in work published by the IEEE are the expression of the authors."

#### Author/Employer Rights

If you are employed and prepared the Work on a subject within the scope of your employment, the copyright in the Work belongs to your employer as a work-for-hire. In that case, the IEEE assumes that when you sign this Form, you are authorized to do so by your employer and that your employer has consented to the transfer of copyright, to the representation of publication rights, and to all other terms and conditions of this Form. If such authorization and consent has not been given to you, an authorized representative of your employer should sign this Form as the Author.

## IEEE Copyright Ownership

It is the formal policy of the IEEE to own the copyrights to all copyrightable material in its technical publications and to the individual contributions contained therein, in order to protect the interests of the IEEE, its authors and their employers, and, at the same time, to facilitate the appropriate reuse of this material by others. The IEEE distributes its technical publications throughout the world and does so by various means such as hard copy, microfiche, microfilm, and electronic media. It also abstracts and may translate its publications, and articles contained therein, for inclusion in various compendiums, collective works, databases and similar publications.

## Reprint/Republication Policy

The IEEE requires that the consent of the first-named author and employer be sought as a condition to granting reprint or republication rights to others or for permitting use of a Work for promotion or marketing purposes.