

Preface

OpenMP is a widely accepted, standard application programming interface (API) for high-level shared-memory parallel programming in Fortran, C, and C++. Since its introduction in 1997, OpenMP has gained support from most high-performance compiler and hardware vendors. Under the direction of the OpenMP Architecture Review Board (ARB), the OpenMP specification has evolved up to and beyond version 4.5. The 4.5 version includes several refinements to existing support for heterogeneous hardware environments, many enhancements to its tasking model including the task-loop construct, and support for doacross loops. As indicated in the technical report previewing version 5.0, it will include additional new features such as a tools interface and task reductions.

The evolution of the standard would be impossible without active research in OpenMP compilers, runtime systems, tools, and environments. OpenMP is important both as a standalone parallel programming model and as part of a hybrid programming model for massively parallel, distributed memory systems built from multicore, manycore, and heterogeneous node architectures. In fact, most of the growth in parallelism of the upcoming exascale systems is expected to come from increased parallelism within a node. OpenMP offers important features that can improve the scalability of applications on such systems.

The community of OpenMP researchers and developers is united under the cOMPunity organization. This organization has held workshops on OpenMP around the world since 1999: the European Workshop on OpenMP (EWOMP), the North American Workshop on OpenMP Applications and Tools (WOMPAT), and the Asian Workshop on OpenMP Experiences and Implementation (WOMPEI) attracted annual audiences from academia and industry. The International Workshop on OpenMP (IWOMP) consolidated these three workshop series into a single annual international event that rotates across Europe, Asia-Pacific, and the Americas. The first IWOMP workshop was organized under the auspices of cOMPunity. Since that workshop, the IWOMP Steering Committee has organized these events and guided development of the series. The first IWOMP meeting was held in 2005, in Eugene, Oregon, USA. Since then, meetings have been held each year, in Reims, France; Beijing, China; West Lafayette, USA; Dresden, Germany; Tsukuba, Japan; Chicago, USA; Rome, Italy; Canberra, Australia; Salvador, Brazil; Aachen, Germany; and Nara, Japan. Each workshop has drawn participants from research and industry throughout the world. IWOMP 2017 continues the series with technical papers and tutorials. The IWOMP meetings have been successful in large part due to generous support from numerous sponsors.

The IWOMP website (www.iwomp.org) provides information on the latest event, as well as links to websites from previous years' events. This book contains proceedings

of IWOMP 2017. The workshop program included 23 technical papers, two keynote talks, and a tutorial on OpenMP. The two-part paper by Leopold Grinberg, Carlo Bertolli, and Riyaz Haque was selected for the Best Paper Award. All technical papers were peer reviewed by at least three different members of the Program Committee.

September 2017

Christian Terboven
Bronis R. de Supinski
Stephen L. Olivier

Scaling OpenMP for Exascale Performance and
Portability

13th International Workshop on OpenMP, IWOMP 2017,
Stony Brook, NY, USA, September 20–22, 2017,
Proceedings

de Supinski, B.R.; Olivier, S.L.; Terboven, C.; Chapman,
B.M.; Müller, M.S. (Eds.)

2017, XI, 350 p. 116 illus., Softcover

ISBN: 978-3-319-65577-2