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# PREFACE

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During the past two decades, the method of fundamental solutions (MFS) has re-emerged as a powerful numerical method for solving partial differential equations when the fundamental solution is known. One of the attractive features of the MFS is its simplicity for solving higher dimensional problems with irregular domains. The MFS can be classified as a boundary meshless method and was originally developed for solving homogeneous problems. In 1990s, the MFS has been extended to solving inhomogeneous elliptic and time-dependent problems though the use of the radial basis functions. Furthermore, the MFS has been widely applied in the area of inverse problems and engineering applications. As a result, the MFS has become very competitive for solving a large class of partial differential equations. On the other hand, there is no doubt that the MFS has many limitations in terms of real applications and theoretical aspects. For instance, the issues of how to properly select the source points on the fictitious boundary outside the physical domain, how to alleviate the highly ill-conditioning problem of the resulting MFS matrix, and how to handle the large-scale problem using the FMS are still outstanding research problems. As the MFS is getting mature, there is a need for a professional meeting to provide a platform for researchers to present their new findings and a forum for discussion on the new development in this fascinating research area. In 2007, the first international workshop devoted exclusively to the MFS was held in Cyprus with great success. An edited book entitled "The Method of Fundamental Solutions — A Meshless Method" was published in 2008 based on the best papers presented in the first international workshop. Four years later, a joint international workshop on Trefftz method IV and the MFS II was held at National Sun Yat-Sen University in Taiwan in 2011. During this workshop, we have noticed that more and more young researchers are involved in the research of the MFS. This is a good sign that the research on the topic of the MFS will be continued for the foreseeable future. At the end of the workshop, we invited all the participants who attended the MFS II to contribute papers for the consideration of publication in an issue of the MFS in the International Journal of Computational Methods. After careful refereeing process, eleven papers were selected to appear in this issue which is entirely focused on the recent development of the MFS.

*Preface*

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