

ALGORITHM FOR FAST SIMULATIONS OF SPACE–TIME FINITE ELEMENT METHOD

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Abstract. *In this paper we consider element partition trees for multi–frontal solver algorithms utilized in space–time finite element method. The element partition trees are utilized for generating the ordering for the multi–frontal solver algorithm. In particular, we consider three or four dimensional finite element method grids where two or three dimensions represent space and one additional dimension represents time. Additionally, we consider computational grids resulting from h–adaptive algorithms, namely grids refined towards point, edge, face or hyperface singularity. We perform numerical experiments and compare our method with alternative state of the art ordering algorithms available through MUMPS interface.*

Algorithm For Fast Simulations Of Space Time Finite

**Ulrich Langer,Marco Discacciati,David
E. Keyes,Olof Widlund,Walter Zulehner**

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Algorithms for Fast Simulations of Space-time Adaptive Finite Element Methods Marcin Skotniczny, 2023 ESDA 1996: Nonlinear systems. Advanced energy systems. Advanced simulation technology ,1996 Scientific and Technical Aerospace Reports ,1995 **Ninth Workshop on Parallel and Distributed Simulation (PADS'95)** ,1995 **Progress of Theoretical Physics** ,1993 **Dissertation Abstracts International** ,2008 The Engineering Index Annual ,1993 Since its creation in 1884 Engineering Index has covered virtually every major engineering innovation from around the world It serves as the historical record of virtually every major engineering innovation of the 20th century Recent content is a vital resource for current awareness new production information technological forecasting and competitive intelligence The world s most comprehensive interdisciplinary engineering database Engineering Index contains over 10 7 million records Each year over 500 000 new abstracts are added from over 5 000 scholarly journals trade magazines and conference proceedings Coverage spans over 175 engineering disciplines from over 80 countries Updated weekly **ACM Transactions on Modeling and Computer Simulation** ,1995 **Simulation digest** ,1995 **The Finding Guide to AIAA Meeting Papers** American Institute of Aeronautics and Astronautics. Technical Information Service,1996 *Journal of Seismic Exploration* ,2009 **Simulation and Modeling** Osman Balci,1994 **Mathematical Reviews** ,2006 *ICASSP 93* ,1993 **International Aerospace Abstracts** ,1999 **Chinese Journal of Electronics** ,2006 **Structures Technology for Future Aerospace Systems** Ahmed Khairy Noor,2000 This new volume edited by the director of the University of Virginia s Center for Advanced Computational Technology at NASA Langley Research Center focuses on the component technologies that will play a major role in structures technology for future aerospace systems Contributors use case histories to demonstrate the technology s development and carry it through to the current state of the art Each chapter describes current capabilities deficiencies and barriers current research activities future directions of development and applicability of the technology in the future both near and far term **Optical Engineering** ,2001 Publishes papers reporting on research and development in optical science and engineering and the practical applications of known optical science engineering and technology **High Energy Physics Index** ,1990 **Energy Research Abstracts** ,1994 Semiannual with semiannual and annual indexes References to all scientific and technical literature coming from DOE its laboratories energy centers and contractors Includes all works deriving from DOE other related government sponsored information and foreign nonnuclear information Arranged under 39 categories e g Biomedical sciences basic studies Biomedical sciences applied studies Health and safety and Fusion energy Entry gives bibliographical information and abstract Corporate author subject report number indexes

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