

PERIDYNAMICS FOR MULTIPHYSICS APPLICATIONS

TRACK NUMBER (200 ADVANCED DISCRETIZATION TECHNIQUES)

Adam Martowicz^{*}, Adi Adumitroaie^{**}
Erdogan Madenci[†], Erkan Oterkus^{††} and Selda Oterkus^{††}

^{*}AGH University of Science and Technology, Department of Robotics and Mechatronics
al. A. Mickiewicza 30, 30-059 Krakow, Poland
adam.martowicz@agh.edu.pl

^{**}Kaunas University of Technology, Faculty of Mechanical Engineering and Design
K. Donelaičio g. 73, Kaunas 44249, Lithuania
adi.adumitroaie@ktu.lt

[†]The University of Arizona, Department of Aerospace and Mechanical Engineering
1130 N. Mountain Ave., Tucson, AZ 85721, USA
madenci@email.arizona.edu

^{††}University of Strathclyde, Department of Naval Architecture, Ocean and Marine Engineering
100 Montrose Street, Glasgow G4 0LZ, United Kingdom
erkan.oterkus@strath.ac.uk, selda.oterkus@strath.ac.uk

Key words: Peridynamics, Nonlocal modeling, Multiphysics, Numerical model.

ABSTRACT

Peridynamics, a nonlocal theory, introduced by Silling in 2000 has recently arisen as one of the most commonly applied alternative for analyzing problems in continuum mechanics. It removes the shortcomings of local methods, and enables solution of multiscale and multiphysics problems including damage and fracture. This symposium is intended to provide a forum for researchers to discuss the latest developments in the field of peridynamics and other nonlocal theories for mechanics related applications. Possible contribution topics of interest include, among others:

- theoretical approaches and numerical implementation,
- nonlocal elasticity and plasticity,
- nonlocal damage and fracture,
- nonlocal multiscale methods (e.g., for heterogeneous composite materials),
- nonlocal multiphysics methods (piezoelectricity, thermoelasticity, thermoelectricity, etc.),
- local/nonlocal coupling methods,
- practical engineering applications.

REFERENCES

- [1] S.A. Silling, "Reformulation of elasticity theory for discontinuities and long-range forces", *Journal of the Mechanics and Physics of Solids*, Vol. **48**(1), pp. 175–209, (2000).
- [2] S.A. Silling, M. Epton, O. Weckner, J. Xu and E. Askari, "Peridynamic states and constitutive modeling", *Journal of Elasticity*, Vol. **88**(2), pp. 151–184, (2007).