

Mar 22, 2018 Isogeometric Methods in Solids, Structures, and Fluid-Structure Interaction

ABSTRACT:

This presentation is focused on Isogeometric Analysis (IGA) with applications to solids and structures, starting with early developments and results, and transitioning to more recent work. Novel IGA-based thin-shell formulations are discussed, and applications to progressive damage modeling in composite laminates due to low-velocity impact and their residual-strength prediction are shown. Fluid-structure interaction (FSI) employing IGA is also discussed, and a novel framework for air-blast-structure interaction (ABSI) based on an immersed approach coupling IGA and RKPM-based Meshfree methods is presented and verified on a set of challenging examples. The presentation is infused with examples that highlight effective uses of IGA in advanced engineering applications.

BIOGRAPHY:

Yuri Bazilevs is a Full Professor and Vice Chair in the Structural Engineering (SE) Department, in the Jacobs School of Engineering at UCSD. Yuri completed his PhD and Postdoc training at UT Austin's Institute for Computational Engineering and Sciences (ICES). He joined UCSD as an Assistant Professor in 2008, was promoted to Associate Professor with tenure in 2012, and, subsequently, to Full Professor in 2014. Yuri develops sophisticated computational techniques and tools to build predictive models for a wide range of applications. His work addresses complex problems in the areas of medicine, such as blood flow in the heart and arteries, as well as in medical devices including blood pumps and artificial hearts; renewable energy, such as assessing damage to wind turbines due to extreme conditions in harsh offshore environments; and protecting infrastructure against man-made and natural disasters, such as assessing the response of structures to terrorist attacks. For his research contributions Yuri received several awards and honors. Most recently, he was included in the 2014, 2015, 2016, and 2017 Thomson-Reuters lists of Highly Cited Researchers, both in the Engineering and Computer Science categories. More information about Yuri may be found at <<http://ristretto.ucsd.edu/~bazily>>.



Yuri Bazilevs

*Professor
Department of
Structural Engineering,
University of California,
San Diego, La Jolla, CA*