MISSOURI S&T University of Science & Technology

Mathematics & Statistics Colloquium

Friday, July 23, 2021, 4:15pm-5:15pm

CS 120 or online-Zoom Meeting ID: 7226191765
Password (if prompted): 371814

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Chair Professor

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Coupling and decoupling of free flow and flow in porous media and related interfacial conditions

Abstract. Many natural and engineering problems involve the interaction of free fluid flow with fluid flow in porous media. Well-known examples include flows in karst aquifers, fluid filtration processes, proton exchange membrane fuel cell, hyporheic zone among many others. In this talk, we address the following physically important questions. 1. How do free flows interact with flows in the porous media? 2. Can the interface conditions be derived in a systematic manner? 3. How are the various boundary conditions related to each other? 4. Are there physically important regimes where the two subsystems decouple? The talk is based on recent work with Y. Cao, W. Lyu, M. McCurdy, N. Moore, and H. Wu published in SIAP and JFM among others.

Biographical Sketch. Dr. Wang received his Ph.D. in Applied Mathematics from Indiana University in 1996. He was a Courant Instructor at the Courant Institute from 1996 to 1998. Dr. Wang joined Iowa State University in 1998 where he was promoted to Associate Professor in 2001. He moved to Florida State University in 2003 and was promoted to Professor in 2006. Dr. Wang served as the Chair of the Math Department from 2012 to 2017 and the Director of Applied and Computational Mathematics from 2009 to 2012. He joined his alma mater Fudan University as a Distinguish Professor in 2017. Dr. Wang is currently a Chair Professor of Mathematics and Chair of the Department of Mathematics at SUSTech. He also serves as the Executive Director of the National Center for Applied Mathematics ShenZhen. Dr. Wang's current research focuses on modern applied and computational mathematics, especially mathematical problems related to fluid dynamics, groundwater research, geophysical fluid dynamics and turbulence, big data and machine learning. He has published over 90 papers in premium journals such as CPAM and a research monograph via Cambridge University Press.