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Dr. Yang is currently the full professor in the Department of Mathematics at the University of South Carolina. He earned his Bachelor's degree in 1998 and Master's degree in 2001 from the University of Science and Technology of China, and received his Ph.D. in computational mathematics from Purdue University in 2007. Following a two-year postdoc at the UNC Chapel Hill, he joined the Math Department of University of South Carolina as the tenure-track assistant professor in 2009. He was then promoted to associate professor in 2013, and a full professor in 2018. Dr. Yang's research focused on the mathematical modeling, numerical analysis, scientific computing, for applications ranging from fluids, solids, and soft matter to cell dynamics. He has already published more than 150 papers in peer-reviewed SCI journals, with more than 8000 citations and H-index of 48, according to Google Scholar. Dr. Yang has been invited to give academic talks at numerous international and domestic conferences, including a plenary talk at ICOSAHOM held in Korea in 2023. Dr. Yang was also recognized as one of Stanford's top 2% worldwide scientists consecutively from 2019 to 2022. Additionally, Dr. Yang serves as an associate editor for several journals, and his research has continuously received support from various federal agencies, including the National Science Foundation (NSF) of USA.

Title: Some topics on gradient flow approach and its applications to various fields

Abstract:
Developing efficient numerical algorithms for highly nonlinear and coupled Partial Differential Equation (PDE) systems has been a longstanding challenge, prompting numerous efforts in this field over many years. We aim to construct a framework approach to address major weaknesses in nearly all existing numerical algorithms designed for solving coupled nonlinear gradient flow systems. These methods have been applied to some well-known systems, such as the anisotropic phase-field dendritic crystal growth model, yielding efficient numerical schemes characterized by linearity, a fully decoupled structure, unconditional energy stability, and second-order time accuracy. These features showcase the algorithms` considerable potential for practical applications.