



Department of Mathematics  
Faculty of Science



## SIAM@NUS Symposium Invited Talk

**Date:** June 9, 2021 (Wed)

**Time:** 0930hr – 1040hr (Singapore Time Zone, GMT + 8)

**Zoom Info:** <https://nus-sg.zoom.us/j/84650886751?pwd=ZzRFM0NCTlpkbTMwc2k3UEpVbFB6Zz09>

**Meeting ID:** 846 5088 6751 / **Passcode:** 146472

### Symmetry Breaking of phase field models

**Speaker: Prof. TANG Tao (BNU-HKBU United International College & SUSTech)**

Professor Tang Tao is the Chair Professor in Mathematics at the SUSTech International Center for Mathematics and a Member of the Chinese Academy of Science. He obtained his Bachelor's degree in Mathematics from Peking University in 1984, followed by a PhD in Applied Mathematics from the University of Leeds in 1989. He was elected as Member of the Chinese Academy of Sciences in 2017.

Professor Tang taught at the University of Simon Fraser in Canada from 1990 to 1998 and obtained tenure there. He subsequently served at Hong Kong Baptist University from 1998 to 2015, in a variety of key roles, from Head of the Department of Mathematics, Dean of Science, Director of Graduate School, to Associate Vice-President. In May 2015, Professor Tang was appointed Vice-President of SUSTech as well as chair professor in the Department of Mathematics. He had been the Provost of SUSTech from 2018 to 2019. In February 2019, he became the Executive Director of SUSTech International Center for Mathematics.

### About the Talk

**Abstract:** This talk is concerned with numerical solutions for the Allen-Cahn equation. Surprisingly it is found that using standard numerical discretizations with high precision computational solutions may converge to completely incorrect steady states. This happens for very smooth initial data and state-of-the-art algorithms. We analyze this phenomenon and showcase the resolution of this problem by a new symmetry-preserving filter technique. We develop a new theoretical framework and rigorously prove the convergence to steady states for the filtered solutions.