

Chang-Shou Lin



Position

Chair Professor of Department of Math., NTU

Research Fields

Nonlinear Elliptic Partial Differential Equations, Differential Geometry

Research Interests

My recent research interests cover the following subjects:

- *Abelian or NonAbelian vortices*
These are equivalently to solving nonlinear PDE (systems) with exponential non-linearity, including the Chern-Simons-Higgs Equation, $SU(N)$ Chern-Simons-Higgs models or some other models from super symmetric fields theory, Non-Abelian monopoles etc. We are concerned the question of existence (or uniqueness) of topological solutions, non-topological solution in \mathbb{R}^2 , existence of solutions in a flat torus. The most important issue is to understand the behavior of bubbling solutions, and to construct bubbling solutions.
- *t^*t Toda system and isomonodromy theory*
We are interested in the global solutions of t^*t Toda system as well as solutions (with singularities). The main issue is to study the connection formulas.
- *Mean field equation at critical parameters*
We study the Liouville equation with singular data at $8m\pi$ in a flat torus. This problem is closely related to the classic Lamé equation. It is interesting to note that the existence of solutions only depends on the geometry of the torus via the Green's function.

Research Group

- *Martin A. Guest (Tokyo Metropolitan University, Japan)*
- *Chun-Hsiung Hsia (National Taiwan University, Taiwan)*
- *Gabriella Tarantello (University of Rome Tor Vergata, Italy)*
- *Jun-cheng Wei (The Chinese University of Hong Kong, Hong Kong)*
- *Yisong Yang (Polytechnic Institute of New York University, USA)*
- *Lei Zhang (University of Florida, USA)*