



## 复旦大学数学科学学院 数学综合报告会

报告题目: Soliton resolution for the sine-Gordon equation

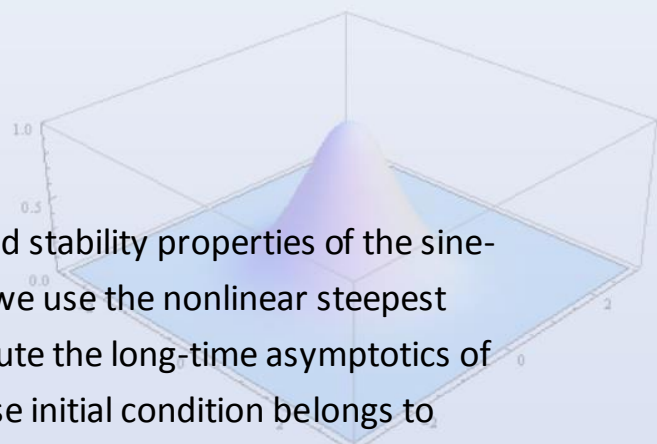
报告人: 陆冰滢 博士 (University of Bremen)

时间: 2021-08-18 星期三 14:30--15:30

地点: 腾讯会议: 525 721 484

### 报告摘要:

In this talk, we study the long-time dynamics and stability properties of the sine-Gordon equation  $f_{tt} - f_{xx} + \sin f = 0$ . Firstly, we use the nonlinear steepest descent for Riemann-Hilbert problems to compute the long-time asymptotics of the solutions to the sine-Gordon equation whose initial condition belongs to some weighted Sobolev spaces. Secondly, we study the asymptotic stability of the sine-Gordon equation. It is known that the obstruction to the asymptotic stability of the sine-Gordon equation in the energy space is the existence of small breathers which is also closely related to the emergence of wobbling kinks. Combining the long-time asymptotics and a refined approximation argument, we analyze the asymptotic stability properties of the sine-Gordon equation in weighted energy spaces. Our stability analysis gives a criterion for the weight which is sharp up to the endpoint so that the asymptotic stability holds.



非线性数学模型与方法教育部重点实验室  
中法应用数学国际联合实验室  
上海市现代应用数学重点实验室  
复旦大学数学研究所