



复旦大学数学科学学院 数学综合报告会

报告题目：3-reduction of the KP hierarchy and complete classification of soliton solutions for the “good” Boussinesq equation

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摘要： The “good” Boussinesq equation is known to have merging solitons. The Boussinesq equation can be obtained by 3-reduction of the KP hierarchy. The generic line-soliton solutions for the KP II equation is completely classified by totally non-negative (TNN) Grassmannian. Thus a complete classification for the multiple soliton solutions is achieved for the Boussinesq equation by considering the eligible TNN Grassmannians after reduction. In particular, we answer positively to a conjecture by Rasin–Schiff (2017), where the authors observed from numerical experiments that there are no multiple merging for regular soliton solutions. The same machinery can be applied to 4 and higher-reduction. The coupled KdV equation is one example of the 4-reduction of the KP hierarchy.

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