

# 学术报告

## **Finding excited states of Bose-Einstein condensates by a constrained gentlest ascent dynamics**

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**Time:** 14:00-15:00, April 1 (Monday) 2019

**Venue:** Room 111, Center for Applied Mathematics

**Abstract :** The constrained gentlest ascent dynamics (CGAD) is developed for stably finding excited states of Bose-Einstein condensates (BECs) by considering them as constrained saddle points of the Gross-Pitaevskii energy functional. First the formulation of the CGAD is carefully designed to search a constrained saddle point with any specified index, and its linear stability analysis is provided. Then an effective time-splitting strategy of CGAD based on a discrete orthonormalization is presented to simplify the numerical implementation. Further a fully discrete semi-implicit backward Euler sine-pseudospectral approximation is described. Finally, extensive numerical results are reported to show the efficiency of our methods, some of them are consistent with theoretical and computational results which are already in the literature, and others show some new interesting physics.

欢迎大家参加！