

平成 30 年 8 月 6 日

非線形発展方程式セミナーのご案内

上海の Fudan 大学から Hao Wu 教授をお招きし、下記のような研究集会を行いますのでご案内申し上げます。皆さまのご参加をお待ちしております。

記

研究集会名: 第 8 回 非線形発展方程式セミナー @KUE

日時: 平成 30 年 8 月 27 日 (月)

場所: 〒 612-8522 京都市伏見区深草藤森町 1 京都教育大学 A 棟 4 階 1A402

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プログラム

8 月 27 日 (月)

[1] 15:00~15:30 **Makoto Okumura (Graduate School of Osaka University)**

Title: A linear and structure-preserving scheme for a conservative Allen–Cahn equation with a time-dependent Lagrange multiplier

Abstract: We propose a linear and structure-preserving scheme for a non-local conservative Allen–Cahn equation introduced by Rubinstein and Sternberg (1992) based on a combination of the discrete variational derivative method (DVDM) and a linearization technique. DVDM is a numerical method proposed by Furihata (2010). DVDM schemes inherit conservative or dissipative properties from the original PDEs in a discrete sense. By this approach, we obtain a nonlinear scheme in general. Then, we need some iterative solver to solve the system. This means that the computational cost is expensive. Therefore, we also use a linearization technique. The basic idea of our linearization technique is the decompositions of nonlinear terms by introducing extra time steps of numerical schemes. We expect that the proposed linear scheme is faster than the nonlinear one. In this talk, we show the stability, the existence and uniqueness of the solution for the proposed scheme, and the error estimate. We also show numerical experiments.

15:30~15:40 Coffee Break

[2] 15:40~16:30 **Hao Wu (School of Mathematical Sciences, Fudan University)**

Title: An introduction on the Energetic Variational Approach and its applications

Abstract: In this talk, we will discuss the Energetic Variational Approach for modelling complex physical systems. This approach is based on a balance between the maximal dissipation principle and the least action principle. As a consequence, it naturally keeps the physical laws, such as the conservation of mass, energy dissipation and force balance. Then we will show its application to some well-known systems, for instance, the Cahn–Hilliard equation etc.

[3] 16:30~ Free Discussion