

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Primary applications of fundamental processes theory of fluid dynamics in ALE method and ICF research**

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报告时间: **2019 年 11 月 19 日 (周二)**

**上午 10:00**

报告地点: 科技综合楼三层

**311 报告厅**

## **Abstract:**

Arbitrary Lagrangian–Eulerian (ALE) methods for large deformation problems were developed and widely used in engineer research of weapons and ICF. This family of methods often consist of three steps: a Lagrangian step to solve Lagrangian equations, a rezone step to generate the mesh of better geometric qualities for the next time step, and a remapping step to interpolate physical values from the Lagrangian mesh to the rezoned mesh.

In practical applications, it will takes too much computing time if rezone and remap preformed at each step, so it's important to predict. There are many ways to predict, and here we describe the studies of the optimal evaluation index of auto-rezone with theory of fundmental processes of fluid dynamics. According to typical large deformation compressible computational fluid dynamics problems, we studied vorticity, dilatation, Lamb vector, generalized Lamb vector, and their divergence, curl and time derivatives, respectively for Eulerian and Lagrangian meshes. We try to understand the effects of the fundmental processes of fluid dynamics in the studies of large deformation compressible computational fluid dynamics problems, and look for the optimal evaluation index for the starring of rezoning stage of ALE meshes in order to carry out the optimal self-adaption strategy of ALE processes. It has shown effectiveness in ICF applications.

**欢迎大家参加！**