

SEMINAR ON APPLIED AND NUMERICAL ANALYSIS

Date: November 8, 2019

Speaker: Juliane Dannberg

Title: Numerical Modeling of Coupled Magma/Mantle Dynamics Using the Community Code ASPECT

Abstract: Melt generation and migration are an important link between surface processes and the thermal and chemical evolution of the Earth's interior. However, the governing system of equations becomes mathematically degenerate in the limit of vanishing melt fraction. I will talk about a new formulation of the equations for coupled magma/mantle dynamics that addresses this problem, and its implementation in the open source finite element code ASPECT. The use of adaptive mesh refinement together with a high-performance, massively parallel implementation allows for high resolution, 3d models of melt segregating through and interacting with a solid host rock in the Earth and other planetary bodies.