

# **Numerical Study of Melt Migration in an Upwelling Heterogeneous Mantle**

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## **Abstract**

Generation and segregation of magma in the Earth and planetary interior has been a subject of intensive studies in the Earth Science community. In particular, Orthopyroxene free dunite channels have been frequently observed in mantle sections of ophiolites. One of the proposed theories to explain this phenomenon is the dissolution of pyroxene when olivine normative basalts percolate through a partially molten mantle. In this presentation, I'll talk about developing an efficient and accurate numerical model using Discontinuous Galerkin methods that can be used to study the interaction between the melt and solid mantle during melt migration. I will also present a set of algorithms that can be used to accelerate computations without losing the important features of melt migration. Time permitting, I will discuss applications of these numerical methods in other fields such as oil reservoir simulations.