

## Abstract

The aim of this project is to simulate the 2D Rayleigh-Benard convection using the OpenFOAM. With a very small temperature difference, the Boussinesq approximation is used in the governing equations. The project investigated the convection pattern between the hot and cold plates. The streamline/velocity is also investigated for Rayleigh-Benard convection rolls.

### Problem Statement

A hot plate and a cold plate is considered as shown in figure 1. The cold plate is over the hot plate, i.e.  $\theta_1 < \theta_0$ .

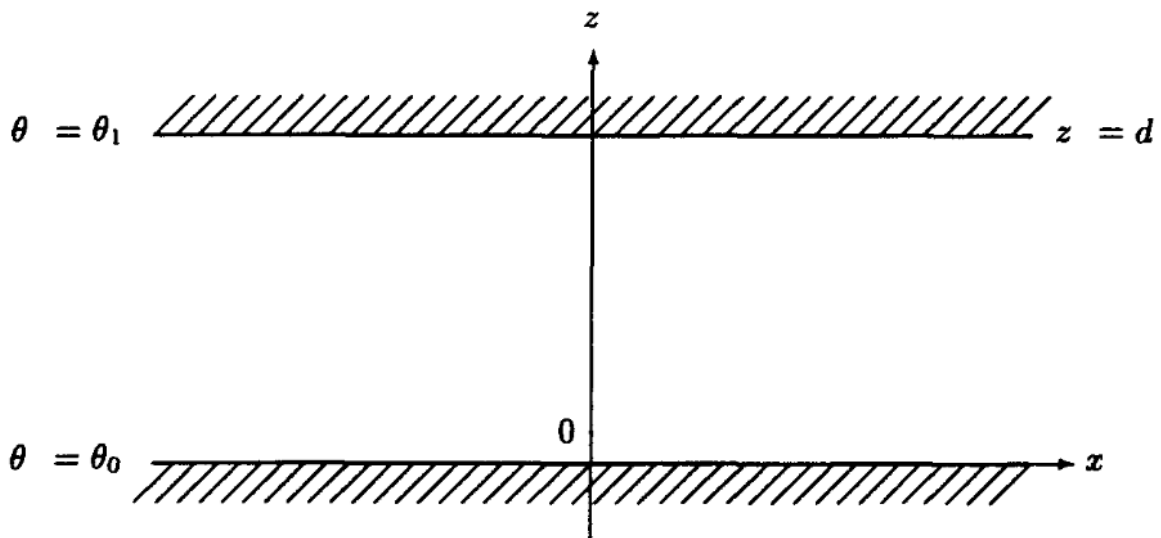


Figure 1. The configuration of Rayleigh-Benard convection

The fluid properties and other parameters will be fixed depending upon the onset of the instability.