

A Study of Multiphase Flow in Resistive Plate Chambers

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Abstract

An attempt is made to study the gaseous flow in Resistive Plate chambers(RPCs)- A gaseous detector used in experimental physics for detection of particle behaviours. The present study is based on two phase laminar flow analysed through two methods(conservative Level-Set and Phase field methods). A comparison between the two methods is presented. The dependence on flow-rate, inlet positions, grid size is also studied. COMSOL Multiphysics® is the simulation engine to study the gas flow pattern in the RPC and evaluation of its interface. The current focus is to optimize the different parameters related to gas flow for better response signal within the PRC detector that is to be used in INO-ICAL(Indian Neutrino Observatory-IronCalorimeter) Experiment.

Figures used in the abstract

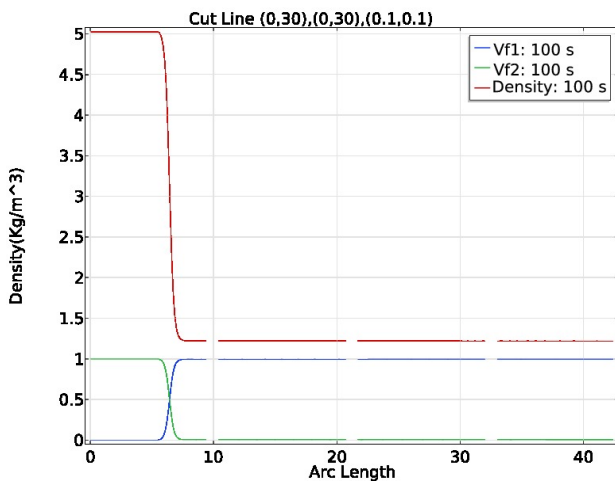


Figure 1: Variation of fluid density and volume fraction of two fluids