

## **THERMAL CONFORT ENHANCEMENT IN A HABITAT ISOLATED FROM THE ROOF BY A POROUS MEDIA**

**MERABTI AHMED, MEHDAOUI RAZLI, ELMIR MOHAMED & BENABDERRAHMANE FARHAT**

Genie mecanique, sciences ET technique Tahri Mohamed University, Algeria

### **ABSTRACT**

The large share of energy consumed for the heating or cooling of buildings has led researchers to address the issue of heat exchange between premises and the environment.

Since Much of the heat loss occurs through the roof, insulating materials slow down heat Transfer through the building envelope. The quality of the insulation required depends on the climate, the exposure of the roofs and also the materials used for the construction. The choice of a material used as insulation depends naturally on its availability and cost. In this study, we propose to analyze the heat Transfer in a ceiling-insulated building by a porous medium (glass wool), based on the effect of the Rayleigh number on the heat exchange between the Building and the outside environment. For this purpose, a Comsol multiphysics software based on the finiteelementmethod is used to solve the equations governing heat transfer in the fluid medium as well as the porous medium. The results will be in the form of current lines, isotherms, temperature profiles and Nusselt numbers..

**KEYWORDS:** Darcy-Brinkman, finite elements, porous media, pitched roof, thermal insulation



