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| Title | Effects of Different Boundary Conditions at the Surfaces of the Extended Computational Domain in Computing the Natural Convection Flow in an Open Cavity | | |
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| Published Journal Name | Dhaka University Journal of Science | | |
| Type of Publication | Joint | | |
| Volume | 64 | Issue | 01 |
| Publisher |  | | |
| Publication Date | January 2016 | | |
| ISSN | 1022-2502 | | |
| DOI | https://doi.org/10.3329/dujs.v64i1.28521 | | |
| URL | https://www.banglajol.info/index.php/DUJS/article/view/28521 | | |
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| Abstract |  |
| Effects of different boundary conditions at the surfaces of the extended computational domain on buoyancy driven natural convection flow in a three dimensional open cavity are studied numerically. This study is carried out for turbulent flow where Rayleigh number is greater than 108. Air is used as working fluid having properties at 25°C temperature and 1atm pressure. To capture the turbulent nature of the flow k -  model is used. ANSYS CFX software is used to solve the governing equations subject to the corresponding boundary conditions. The methodology is verified through a satisfactory comparison with some published results. Average mass flow, temperature, stream line, contour velocity and velocity profile are studied at different height. An extended computational domain around the physical domain of the cavity at different surrounding conditions is considered to investigate the effect of its existence on the computation. Effects of different surrounding boundary conditions on the physical domain of the cavity are studied and reported. A relation among non-dimensional parameters such as Nusselt number, Rayleigh number, Prandlt number and Reynolds number is also reported. | |