1077-35-1498   **Rachad Zaki*** (`rachad.zaki@kustar.ac.ae`). *Homogenization in periodically perforated domains.*

The mathematical theory of Homogenization describes the asymptotic behavior of composite materials with heterogeneities of small size compared to the global dimension of the domain. In order to describe such materials, several scales are needed; one macroscopic scale for the global behavior, and at least one microscopic scale for the heterogeneities. Several methods are currently being used for that purpose, mainly the multiple scale method, the method of oscillating test functions of Tartar known by some as the energy method, and the two-scale convergence method. We will focus on a more recent method known as the periodic unfolding method. After introducing the standard techniques of Homogenization, we will present the main results of the periodic unfolding method in the case of domains that are periodically perforated, and we will look at some applications with different types of conditions (Dirichlet, Neumann, Robin) on the boundary of the holes. (Received September 20, 2011)