1125-35-1293 **Abhinandan Chowdhury*** (chowdhury@savannahstate.edu), Savannah, GA. *Analysis of Memory Effects for the Heat Conductivity of Random Suspensions of Spheres by Using the Method of Random-point Approximation.*

Method of Stochastic functional expansions with random-point basis function is applied to the case of heat conduction of a particulate medium (suspension) subjected to a time-dependent spatially constant temperature gradient. It is argued that the basis function which is appropriate as the basis in modelling the chaotic behavior of nonlinear dynamical systems, e.g. turbulence, is not so well suited for composite materials. It is shown that within the first order of approximation with respect to the concentration, the equation for the kernel of the 1st -order functional integral is the equation of the disturbance introduced by a single spherical inclusion (filler) in a matrix subjected to a time varying spatially constant gradient at infinity. After solving the resulting initial-boundary value problem, the effective connection between the heat flux and temperature gradient is established. It turns out that the effective law involves a retardation (memory integral) of the temperature gradient. Approximate expression for the memory kernel is found by employing a method based on infinite series expansion. An interesting limiting case of filler material with infinite conductivity is discussed where memory integral becomes the Riemann-Liouville half integral. (Received September 16, 2016)