Hp-Clouds in Mindlin Reissner Thick Plate Model

O. Garcia(1), E. A. Fancello(1), C. S. Barcellos(1) and C. A. Duarte(2)

(1) Universidade Federal de Santa Catarina, UFSC, Depto. Eng. Mecânica.
C.P. 476, SC - 88040-900 - Brazil. Fax (048) 234-1519.

(2) TICAM - The University of Texas at Austin, Taylor Hall,
Austin, TX - 78712 - USA.

In the very few last years a number of numerical procedures called as meshless methods have been proposed. Among them we can mention the Diffuse Element Method DEM, (Nayroles 1992), Smoothed Particle Hydrodynamics Method, (Gingold 1982), Element Free Galerkin Method, EFGM (Belytschko 1993), Wavelet Galerkin Methods, (Amarantuga 1994) and the so called hp-Clouds method (C.A.Duarte 1995, 1996). The main characteristic of these methods is the construction of a set of regions covering the domain used as support of the classical Galerkin interpolation functions. The shape of these coverings as well as the regularity of the interpolation functions is variable and not depending on the domain partition usually known as mesh now used just for numerical quadrature. The *hp*-Clouds Method can be focused because of its advantage of considering from the beginning the h and p enrichment of the approximation space. In this work we present some results concerning the behavior of this technique on the solution of Mindlin-Reissner thick plate model.

The most important aspects of the method are shown as well as some details of the data structure used (Object Oriented Programming). Numerical results concerning accuracy of the solution related with characteristics of the interpolation functions (overlapping, h and p enrichment, etc.) for this particular formulation are presented.