World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:10, No:04, 2016

Improvement of the Numerical Integration's Quality in Meshless Methods

Authors : Ahlem Mougaida, Hedi Bel Hadj Salah

Abstract : Several methods are suggested to improve the numerical integration in Galerkin weak form for Meshless methods. In fact, integrating without taking into account the characteristics of the shape functions reproduced by Meshless methods (rational functions, with compact support etc.), causes a large integration error that influences the PDE's approximate solution. Comparisons between different methods of numerical integration for rational functions are discussed and compared. The algorithms are implemented in Matlab. Finally, numerical results were presented to prove the efficiency of our algorithms in improving results.

Keywords : adaptive methods, meshless, numerical integration, rational quadrature
Conference Title : ICAMM 2016 : International Conference on Applied Mechanics and Mathematics
Conference Location : Istanbul, Türkiye
Conference Dates : April 19-20, 2016