

## **Local Radial Basis Function-based Differential Quadrature Method for 2-D Free Surface Problem**

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The approach of differential quadrature combined with the radial basis function by using local collocation to simulate the 2D free surface investigations have been done in present study. Local radial basis function-based differential quadrature (RBF-DQ) method can be considering a mesh-free numerical scheme because the trial function of the local RBF-DQ is replaced with a RBF. Present method not only retains the high accuracy also has the capability of applying to the moving boundary problem. These advantages can directly improve the computational efficiency and save further the memory of mechanic when dealing with the free surface problems. Furthermore, the numerical results have satisfied the good agreement with the existing solution for 1D demonstration and traditional numerical scheme such as finite element method (FEM), experimental measurements and other numerical results. The validation of current numerical simulation was shown the expected results that overcame the issue of mesh distortion for caused by the traditional mesh type numerical means involving the structured and un-structured mesh grid. Therefore, the proposed numerical model provides the promising means to solve the troublesome problem of free surface.

**Keywords:** approach of differential quadrature; radial basis function; local collocation; 2D free surface