## **Cellular Automaton in 2D Elastostatics**

## Q. Ying<sup>1</sup>, J.S Wang<sup>1</sup>, \*W.F. Yuan<sup>1</sup>

<sup>1</sup>School of Manufacturing Science and Engineering, Southwest University of Science and Technology, China.

\*Corresponding author: yuanweifeng@swust.edu.cn

Cellular automaton (CA) is a discrete model which consists of a regular grid of cells, each cell in one of a finite number of states. In a CA model, time is also discretized into a finite number of steps, and the current state of a specific cell is determined by the states of its neighboring cells at the last time step. Up to today, CA has been used in many areas including, computability theory, fluid and traffic flow etc. In this paper, CA is extended to the field of 2D elastostatics. By the proposed method, an elastic domain is discretized by a grid of nodes distributed randomly. The displacement of a typical node is assumed to be dependent on the displacement of the nodes located within its neighboring region. The proposed approach can be regarded as a mesh free method, and it is ideally suited for parallel computing.

Keywords: Cellular automaton, Elastostatics