1023-92-148 **Najia Bao*** (baonajia@uga.edu), University of Georgia, mail address: 215 China Street #305, Athens, GA 30605. *Application of Matrix Tree Theorem in Chinese Medicine.*

In graph theory, Kirchhoff's matrix tree theorem is used to find the number of spanning trees in a graph. During the past decades, researchers focused on the matrix-tree theory applications taken from electrical network theory, organic chemistry, and computing, operational research. In this paper, we discuss its applications in Chinese medicine, that is, main and extra channels, regarded as a network of passages, through which vital energy circulates, regulating bodily functions, and along which the acupuncture points are distributed. The paper will present a review of published research that shows how the matrix-tree theory was used in Chinese medicine practices, that is, the number of spanning trees of channels of a body is equal to any cofactor of the degree matrix of the channel graph G minus the adjacency matrix of G. Furthermore, we reveal how researchers successfully applied minimum weight spanning tree theorem to diagnose and treat with illness. But the procedure is different from the Kirchhoff's electric circuit calculation. In electric circuit calculation, the weight of each edge is fixed. On the contrary, in channel system, the weight of each edge is variable. (Received August 12, 2006)