1086-68-1687 **S E Venegas-Andraca*** (sva@mindsofmexico.org), Ap. postal 12-808 Narvarte, 03001 Mexico City, Mexico. *Quantum walk-based Mathematical Morphology Operators.* Preliminary report.

Image Processing is a pervasive and cross-disciplinary field of computer science and engineering that focuses on storing, manipulating and retrieving visual information in computer systems. Image processing is a most important discipline in many branches of science and engineering (e.g. astrophysics, pattern recognition, medical diagnosis and oil extraction) due to our constant and increasing need to extract information out of images and videos.

Due to the restricted architecture of classical computers and the often overwhelming computational complexity of state-of-the-art classical algorithms in image processing, finding efficient algorithms to manipulate visual information is an important research area in this field. Quantum Image Processing, an emergent field of quantum computation, is a discipline devoted to the development of novel (and faster) quantum algorithms for storing, processing and retrieving visual information.

Mathematical Morphology is a scientific field, based on set and lattice theories, devoted to analysing and processing structures contained in images. In this talk we shall present a quantum-walk based version of fundamental mathematical morphology operators. (Received September 24, 2012)