



## PGSA-BASED LOCALIZATION ALGORITHM FOR WIRELESS SENSOR NETWORK

Yuqiang Qin<sup>\*,1</sup> and Hui Ying<sup>2</sup>

<sup>1</sup>Taiyuan University of Science and Technology

Taiyuan, 030024, P.R. China

<sup>2</sup>The Affiliated Middle School of Taiyuan Normal University

Taiyuan, Shanxi, 030001, P.R. China

Emails: [qinyuqiang@126.com](mailto:qinyuqiang@126.com)

---

*Submitted: Mar. 25, 2016*

*Accepted: July 10, 2016*

*Published: Sep. 1, 2016*

---

*Abstract- This paper proposes a novel localization algorithm for wireless sensor network (WSN). Accurate localization is very important for WSN. WSN localization problem is sometimes regarded as an optimization problem. Plant growth simulation algorithm (PGSA) is a kind of new intelligent optimization algorithm, which is intelligent simulation of plant growth in natural way. In addition to the common characteristics of intelligent algorithms, PGSA shows robustness and provides a global optimal solution, etc. In this paper, further enhancement of the algorithm by adding the plant root of adaptive backlight function to effectively improve the computing speed and localization precision has been reported. Comparing this algorithm with simulated annealing algorithm (SAA), simulation results show that this algorithm has a higher and more consistent localization precision and faster computational speed.*

**Index terms:** wireless sensor network (WSN), localization, PSGA, simulated annealing.