*Int. J. Information Technology, Communications and Convergence, Vol. 3, No. 2, 2015* 105

Copyright © 2015 Inderscience Enterprises Ltd.

**Borderline coverage analysis of a wireless sensor network under random deployment using the union of collinear chords**

G. Mamatha\*

MCA Department,

Acharya Institute of Technology,

Bangalore-560107, Karnataka, India

Email: nidhimam.joshi2@gmail.com

\*Corresponding author

B.G. Premasudha

MCA Department,

Siddaganga Institute of Technology,

Tumkur-572103, Karnataka, India

Email: [bgpremasudha@gmail.com](mailto:bgpremasudha@gmail.com)

**Abstract:** We present a new verification algorithm to check whether the given geographical borderline is fully covered by the randomly deployed sensor nodes or not. When fully covered, we identify those redundant nodes which do not participate in the coverage. Under partial coverage, we determine the coverage ratio and the distribution of uncovered segments. We use union of collinear chords to analyse the sensing coverage of a given borderline in a wireless sensor network.

**Keywords:** union of collinear chords; borderline coverage; sensing circle; sensing radius; communications and convergence.