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Critical Density for Coverage and Connectivity in Two-Dimensional Aligned-Orientation Directional Sensor Networks Using Continuum Percolation

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Abstract | Authors | References | Cited By

Sensing coverage is one of the fundamental design issues in wireless sensor the surveillance quality provided by them. Moreover, network connectivity ena by sensors to reach to the sink node. Given an initially uncovered field, and a directional sensors are continuously added to the sensor network, the size of increases. At some point, the situation abruptly changes from small fragment single large covered area. We call this abrupt change the sensing-coverage p Likewise, given an originally disconnected sensor network, as more and more number of connected components changes such that the sensor network suc connected at some point. We call this sudden change the network connectivi (NCPT). The nature of such phase transitions is a central topic in the percola we introduce aligned-orientation directional sensor networks (ALODSN) in wh based on Poisson Point Process and the orientation of all sensor nodes is the propose an approach to compute density of nodes at critical percolation for b NCPT problems in such networks, for all angles of field-of-view between and

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percolation. Due to percolation theory, the critical density is infimum density t
SCPT and NCPT almost surely occur. Also, we propose a model for percolati
networks which provides a basis for solving the SCPT and NCPT problems to

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