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Daniela Ferrero* (dferrero@txstate.edu), Department of Mathematics, Texas State University, San Marcos, TX 78666, **Seema Varguese**, Department of Mathematics, Cochin University of Science and Technology, Cochin, India, and **A Vijaykumar**, Department of Mathematics, Cochin University of Science and Technology, Cochin, India. *Power domination of honeycomb mesh networks.*

Electric power networks must be continuously monitored. Such monitoring can be efficiently accomplished by placing phase measurement units (PMUs) at selected network locations. Due to the high cost of the PMUs, their number must be minimized. The power domination problem consists of finding the minimum number of PMUs needed to monitor a given electric power system. The power domination problem is NP-hard, but closed formulas for the power domination number of certain networks, such as rectangular meshes have been found. In this work we extend the results for rectangular meshes to honeycomb meshes, subgraphs of Cayley graphs. (Received March 30, 2010)