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Design of a Confidentiality and Access Control Solution for Content-Based Publish/Subscribe Systems C. Wang, Y. Liu, J.C. Gao and X.L. Ma	1883
Application of Participatory Sensing in Meteorological Information Service System X.Y. Sun, J.L. Du and J. Zhou	1887

Chapter 13: Related Topics

Grey Relational Analysis to Assess Algebraic Reasoning Test of the Pictorial Pattern H.L. Ma, D.B. Wu, C.I. Jen and Y.K. Cheng	1893
New Feedback Optimization Method Based on Arithmetic Sequence for an Extended LED Source Z.W. Shi, G.D. Yan, G.Q. Deng, D.H. Luo, Q.R. Wang, M.J. Liang and B.Z. Zhu	1898
Persistence Properties and Unique Continuation of Solutions of a Two-Component Camassa-Holm Equation S.G. Kang and J. Jia	1902
Intelligent Optimization Study of Traveling Salesman Problem Y.Y. Wen	1906
PHD Filter for Multitarget Tracking with Range Ambiguity S.C. Tan, G.H. Wang, N. Wang and H.B. Yu	1909
A Natural BEM on Non-Uniform Grids and its Coupling Method with their Moving Mesh Applications Q. Zheng and X.H. Guo	1913
Research on Vehicle Routing Optimization Based on Improved Ant Colony Algorithm R. Wang and Z.T. Wang	1917
Experimental Investigation of the Water-Based Fog Screen System in Photoelectric Interference Y.J. He, B.L. Ren, H.G. Xu, W. Hua and C.H. Li	1921

Structural Topology Optimization for Improvements of some Shell Structures' Rib Design Process

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